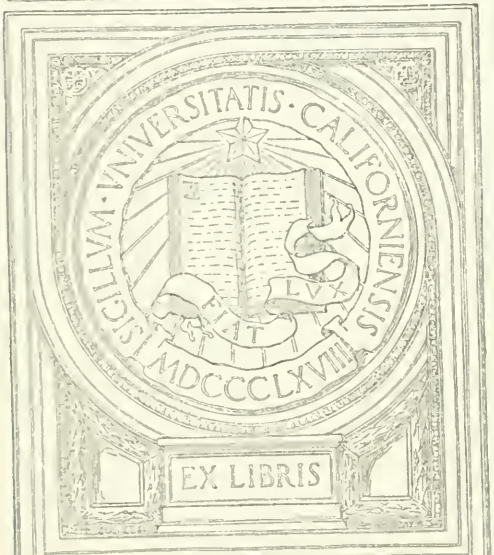
UNIVERSITY OF CALIFORNIA
AT LOS ANGELES



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Coimisiún Fiafruighthe

Maoin is Tionnscal Éireann.

Commission of Inquiry into the Resources and Industries of Ireland

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MINUTES OF EVIDENCE

PART I.

CITY HALL, DUBLIN

2nd, 3rd, & 4th December

1919.

MILK-PRODUCTION AND MILK PRODUCTS FISHERY. . . . . .

Coróin Slán

FIVE SHILLINGS NET

COMMISSION OF INQUIRY INTO THE RESOURCES AND INDUSTRIES OF IRELAND,
AMERICAN CHAMBERS, O'CONNELL STREET, DUBLIN.

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Coimisiún Fiafruighthe
maoin is tionnscal éireann.

Commission of Inquiry into the Resources and Industries of Ireland

Teach Aimeireacánach
Sráid Uí Chonaill Íoch a 15
Baile Átha Cliath.

15 Lower O'Connell Street,
American Chambers,
Dublin.

By a Minute of the Standing Committee of the Commission of Inquiry, 26th January, 1920, it was decided, in view of the immediate importance of the evidence being received by the Commission, and the difficulties that had been created for the publication of this evidence through the ordinary channels of the Press, that the Minutes of Evidence should at once be published by the Commission.

The purpose of the Commission, and the procedure by which it is now conducting the task allotted to it, is dealt with in the opening statement of the Chairman. It therefore only remains to say that the Commission has sat from time to time in various places taking evidence under each of the heads enumerated by him. With the exception of the first two weeks, which are for practical purposes two parts of one Session, each separate Session of the Commission has included evidence under each of these various headings.

Consequently each Session has begun with the Milk enquiry and has concluded with the Power enquiry. Interspersed among the subjects enumerated by the Chairman, the Commission has also, from time to time, taken evidence as to the means and methods by which in the future industrial undertakings might best be prosecuted, having in view the ultimate benefit of the whole population. This branch of the evidence has been taken as and when occasion offered.

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This present nu[illegible]ed by others at regular interv[illegible] under the two Headings on[illegible], and (2) Fishery. The secon[illegible]leat and Meat Products, and [illegible]Coal, or Industrial Alcohol. The [illegible]der all these heads, on January 6th[illegible], Dublin. The fourth number will contain [illegible]us places in the City of Cork. And, in like manne[illegible]cord the evidence of later sittings, Session by Session.

The evidence [illegible] each number is, therefore, incomplete, and must remain incomplete, u[illegible] the Commission has concluded its enquiry according to its present arrangements, before it passes on to other parts of that enquiry.

February 23rd, 1920.

DARRELL FIGGIS,

Secretary.

Commission of Inquiry into the Resources and Industries of Ireland.

FIRST DAY.

The first open sitting of the *Commission of Inquiry into the Resources and Industries of Ireland* was held in the City Hall, Dublin, on

TUESDAY, DECEMBER, 2nd, 1919.

The following Members were present :—

JOHN O'NEILL, *Chairman.*
THOMAS JOHNSON, *Chairman of Food Committee.*
PROFESSOR HUGH RYAN, M.A., D.Sc., *Chairman of Power Committee.*
JAMES C. DOWDALL.
DAVID FAGAN.
P. KEOGH.
P. W. KENNY, T.C.
E. E. LYSAGHT.
COLONEL MAURICE MOORE, C.B.
JOHN MURPHY.
GEORGE NESBITT.
A. J. NICHOLLS.
JOHN SWEENEY.
JOHN SWEETMAN.
ROGER SWEETMAN, T.D.
MRS. WYSE POWER.

DARRELL FIGGIS, *Secretary.*

The Chairman in opening the proceedings said :—

I cannot do better, at this the first Open Sitting of the *Commission of Inquiry*, than to read the Terms of Reference that outline the scope of the work that has been entrusted to us. Those Terms are :—

> "To inquire into the National Resources and the present condition of Manufacturing and Productive Industries in Ireland, and to consider and report by what means those Natural Resources may be more fully developed, and how those Industries may be encouraged and extended."

It will be seen that the scope of this Inquiry is large, and includes not only an investigation of the Resources and Industries of the country, but also a recommendation as to the means and methods by which those Resources may be developed, and the Industries encouraged and extended. For the purpose of this very important work, vitally affecting the life and welfare of all Irishmen,

irrespective of creed and opinion, a number of Commissioners have been called together from every part of the country. They have not been chosen for their political opinions, but for the service they can render in this important work.

I wish to make that quite clear in case there should be any misapprehension in the minds of the public. We are now an autonomous body, administering our own means, and devising our own methods, by which our labour can be of benefit to the people of Ireland in directing the industrial thought and activity of the Nation along such lines that its prosperity may be achieved, and its welfare assured. Our only thought is to seek that welfare and prosperity.

I might add, perhaps, that we have been assisted by men of all shades of political opinion and of all classes, who have come forward freely to offer us of the best of their assistance. We have been very glad to accept their service. I hope I may say that we have every right to expect that service, because our only desire is that we may in our turn offer our service to the country.

Perhaps I should say a word or two with regard to the evidence that will be placed before us at these Open Sittings. It will be hardly necessary for me to say that the wide scope of our Terms of Reference has placed us in a little difficulty. We have come to the conclusion that earlier Commissions, even with the best intentions, have looked for failure in trying to do too many things at the one moment. We are trying to avoid that procedure. Instead of wandering through Ireland taking evidence on any and every subject covered by our Terms of Reference, we have decided to do one thing at a time, and to proceed from subject to subject, as the work on each subject approaches completion.

Therefore, we appointed at our first Sitting a Committee on Food and a Committee on Power. These Committees have met each week for the past two or three months. These Committees in their turn have had to sub-divide their subjects. As these sub-divisions have been completed, they have been referred back to the Full Commission in order that it might sit openly to take evidence.

Consequently, we have now to hear evidence on the following subjects :—

1. Milk, Milk Production and Milk Products.
2. Fishery.
3. Meat and Meat Products; and
4. Power, whether derived from the Coal, Peat, Water, or Industrial Alcohol Resources of the country.

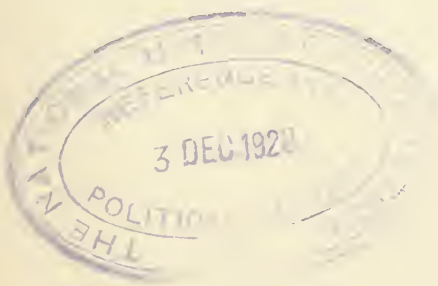
On the present occasion, sitting in the capital City of the country, the evidence has been so selected as to give the general outlines that it is believed

subsequent evidence will complete. In the New Year we hope to issue Reports as early as possible, which we trust will be of immediate practical service to all Irishmen and women.

To-day we will be hearing evidence on Milk, Milk Production, and Milk Products. This evidence will continue to-morrow morning. To-morrow evening we will take evidence on Fishing. And so we will continue on to the end. I should say, perhaps, that in addition to evidence that will be offered before us on this occasion directly under the subjects I have mentioned, we will also be receiving certain evidence that will be offered us as to the means and the principles by and on which, in the judgment of witnesses, industrial enterprise in this country should most profitably and advantageously be conducted.

No Commission that has ever sat in Ireland, or with regard to Ireland, has yet issued in any practical work. It is our hope and faith that this Commission will change that bad custom. I have occasion for that belief, for our hope and faith in our work is grounded in love—in love of country. At least it will, as far as we can help it, not be our fault if our labours do not issue in practical effort.

I take advantage of this opportunity, on behalf of the Commission, to thank the Lord Mayor and Corporation for so courteously placing this Council Chamber at our disposal.



MILK, MILK PRODUCTION AND MILK PRODUCTS.

EVIDENCE OF R. A. ANDERSON, *Secretary to the Irish Agricultural Organisation Society.*

1. Mr. Chairman, and Gentlemen, I will be as brief as I can in dealing with what is really a very complicated and difficult subject. Ireland has always been a country noted for dairying, and the Dairying Industry has played a very important part in the general agricultural economy of the country, because in addition to producing large quantities of butter in days gone by, when very little butter was obtainable in other countries, it had a very large live stock trade. And the manufacture of butter was the form of dairying which lent itself most suitable to the production of live stock. In the early part of the year when the majority of the calves were dropped they were reared on fresh milk, and gradually got separated or skim milk, until they were weaned. If, for instance, cheese making had been resorted to instead, the number of young stock which could have been reared would have been very much smaller than the number reared under the butter-making system. Anything which might happen to the Dairying Industry to disturb this balance which is maintained at present between the different branches of agriculture, would have a most disastrous effect all round. Ireland is very largely, indeed I may say solely, the source from which Great Britain obtains her store cattle. It is also very largely the source from which butter supplies are obtained; and latterly it has become the source from which large quantities of cheese are obtained. Now, the *Commission* will have to bear with me if I appear somewhat discoursive and rambling. I have not had time to make out what I would have wished to have done, that is, a summary or abstract of the evidence which I propose to give you. If I appear to be unduly prosy I hope the *Commission* will pull me up just to ask me questions.

2. *Edward E. Lysaght.* Are you prepared to have a question asked while you are speaking? *R. A. Anderson.* Certainly. *Chairman.* If we could avoid that I would prefer to let Mr. Anderson finish and then ask whatever questions you wish.

3. *R. A. Anderson.* At the present time the Dairying Industry may be divided under practically three main heads, as far as the farmers are concerned in Ireland; that is butter-making, cheese-making and the sale of whole milk. It would appear to the ordinary individual that there ought to be some parity existing between the prices paid for these three commodities, but such is not the case. Butter at the present time is selling retail in this country at 2/10 a pound;

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and in England at 2/6 a pound. Cheese is selling retail at 3/-, and milk is fetching up to 3/4 here in Dublin, and anything from that down to 2/- elsewhere. Take a gallon of milk as the unit. You can produce a pound of cheese from a gallon of milk, but it takes two and a half gallons to produce a pound of butter, and a gallon of milk can be sold wholesale at 2/- for consumption as milk. So as between cheese-making and the sale of milk there is very little to choose. There is possibly more inducement to sell milk, because you eliminate the cost of cheese-making, but as against that, in order to sell milk you have got to treat it in some way to prevent it going sour. It is not easy to keep milk fresh when it has to be sent long distances for consumption in towns. In order to do so with safety it is necessary to have the milk very carefully selected and handled. You have to chill it down to a sufficiently low temperature to enable you to transport it to Dublin. That is only the beginning of your troubles. You have got to deal with the railway companies. The train services do not provide for this traffic, nor do the companies provide in all cases suitable vehicles for the conveyance of milk. It is the practice that the cans in which milk is transported from the country to town are returned empty, at *Owner's Risk*, to their destination, and are carried free. The railway companies accept no responsibility for loss or damage to these cans unless you can prove wilful negligence. That, I needn't tell you, is practically impossible. The result is a great number of people have declared against supplying milk to the towns. They prefer to make cheese.

There is a further and I think a serious obstacle to obtaining supplies of milk for cities like Dublin. It is this: the cost of distribution in Dublin is excessive. It is conducted in an uneconomic way. Anybody who goes through the streets of Dublin in the morning can see for himself three or four milk-carts in a small street delivering milk at the one time, while one cart could deliver it. The public is paying for that, and the cost of distribution owing to that uneconomic system has gone up enormously. Of course it has been increased by war conditions. These are commonly the excuses for charging very high prices for milk. Further a system of milk supply prevails in Dublin where people who supply the bulk of the milk are not farmers at all, but take accommodation land at competition rents outside the city boundaries. These rents have been forced up recently owing to the competition from cattle dealers, butchers and others who also require this accommodation land. The rents have gone up to as much as £20 an acre for this land near Dublin. These men, in addition to having no land of their own, are renting land on the eleven months system, and raise no crops at all. They buy their hay; they buy their roots and brewers'

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grains, and practically everything cows consume. Not only that, but they don't breed from their cows, nor do they keep them at the end of their period of lactation. The cows are kept highly fed during their period of milking in order to fatten them off when they go dry, which of course, tends to increase the cost of the milk, and at the end of the period they are sold to the butcher, and in that way large numbers of valuable dairy cows are lost to the country. I ought also to call attention to the fact that the Association to which these dairy men all belong, is not all composed of men who take accommodation land and buy the food they give to their cattle. Some of them are farmers and pretty extensive farmers, but they all share in the high prices; and whether a man buys the stuff at retail prices on which he feeds his cow, or whether he grows it on his farm, he gets the same price for milk.

I leave it to any member of the *Commission* to judge for himself whether there is any great inducement for farmers in County Cork to send their milk and pay carriage on it to Dublin, at 2/- a gallon, when they know it is going to be distributed in Dublin at a profit of 1/4 a gallon. The dairy farmer has a great deal of risk at the present time. He has to deal with a wholly new set of circumstances—with a complete change in the attitude of labour towards Sunday work. There are various other risks to which the farmer is exposed. He runs the risk of a bad harvest, and if he is not able to feed his cows properly during the winter, he cannot get a good return during the following summer season. We have had a great deal of information to that effect recently where it was pointed out that the summer following a bad harvest invariably proved a bad summer for milk production. The cows became so thin, got into such poor condition through bad food during the winter—they were given food that was unsuitable and unwholesome, it being so difficult to obtain concentrated foods to give them—that they did not give their proper yield of milk the following season.

Another danger is that Contagious Abortion may come into the herds. It is a most terrible scourge, and it is only recently that proper means were devised for dealing with it. A preventive course of treatment can be adopted by inoculation of the animals with serum, sometime before they come in calf. If abortion does take place, there is disinclination to disclose the fact, and farmers do not in such cases always adopt the method of treatment necessary to prevent its spread. I am afraid farmers as a rule—they are only human beings—if they have got a cow that aborts, keep the fact to themselves. Even through the food the infection gets into the blood of the other cows, and in that way the whole herd becomes affected. In a number of cases I have come across

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in large herds of cows practically few have produced live calves, which is a desperate loss to the farmer. I mention that, to show that the farmer is not what is popularly believed, an idle man who runs no risk. Dairy farming is the most difficult branch of agriculture. If you want to do justice to cows you should try and have the periods between milking as nearly as possible equal. If you can milk your cows at six o'clock in the morning and six in the evening it is the ideal plan. But you cannot get people to do that. The farmer himself is out, say, at cock crow, although it is the custom to suppose he is rolling in money and that he is getting it as easily as possible; though a considerable percentage of them would prefer to drive a milk-cart at a profit of 1/4 a gallon to producing milk at 2/-.

I mentioned a few minutes ago the question of labour troubles. I wish to be perfectly clear about this. The conditions of labour have undergone a very complete change all over the country, and in no branch of farming has the change been more felt, or is being more dreaded, than it is in connection with dairying. The small farmer, with perhaps up to ten cows, whose families are able to attend to them and milk them, is not, as a matter of fact, affected very much by this new situation. But the big dairy farmer with fifty cows, or even with twenty-five or thirty cows, is a very essential part of the dairying machine—he is indeed its mainspring. To him you must look for a renewal of the stock of the country. Therefore, the big farmer has got to be looked after just as well as the little farmer. Cases have come under my notice recently where, without any warning at all, milkers had absented themselves on Sunday, and cows had to be milked anyhow. The farmer and his family do their best in such cases, but if this were to happen in the height of the season when the cows are in full milk, these cows would be utterly destroyed as milkers, and that would be a loss to the whole community. It is not so much, as far as I can ascertain, a question of wages. Farmers seem to be willing enough to pay reasonable wages for this Sunday work, but there is a great disinclination all round to work on Sundays. It is hard work, dirty work, and not very attractive even in the summer time. It is real drudgery to be at it constantly, and I don't wonder at people wishing to avoid Sunday work; but if we are going into this industry we must face that fact, and see how we can get around it.

In days gone by cows were all milked by women. There was no such thing as a man milking a cow. Men would not consider it in their work to milk a cow. Whatever be the cause, women have gone out of the business, and in a great number of cases, therefore, cows have got to be milked by men and boys. A cow is, perhaps, one of the most sensitive animals there is. If she is bothered

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or worried while milking she won't give the same quantity, or even the same quality. She has got to be treated gently. In the old days it was believed there was a very strong link between the milker and the cow. I believe it to be true, for I have seen, again and again, the cow with eyes half shut quietly chewing her cud, partly hypnotised by the folk song of her milker, and seeming to enjoy the operation. A cow that is frightened doesn't give her milk freely. Milking is not a pleasant operation. It is one that requires considerable skill. People must be gentle and must be skilful; and above all things must see that the cow is thoroughly milked. If she is not milked out, the cow will go dry rapidly. Perhaps the *Commission* may say, what about milking machines? So far they are little used in this country. They are largely used in Australia, New Zealand, Canada, and the United States. So far as we have been able to ascertain, there is no reliable milking machine within reach of the ordinary farmer at the present time. At any rate, all machine-milked cows have to be "stripped" by hand.

To go back to the labour problem, it is not a question of wages. Farmers are willing to pay fair wages, but they have a very genuine fear that they may be left without milkers at a critical time, even if they pay them. Strikes take various forms. There is the "lightning" strike and the "sympathetic" strike. Of two neighbouring farmers, A. may be a dairy farmer and B. a store cattle man. A. has a large dairy with nothing but paid help to look after his cows. He has no quarrel with his milkers, but they go on strike because B., the grazier, has had a dispute with his workers. A.'s cows are left high and dry. They soon will be dry anyhow. That is the danger A. is in. Therefore, if he has got about 50 cows, and if he is a prudent man, he will do what is being done by his fellows all over the country at present, and reduce his dairy herd to such dimensions as would enable him and his family to deal with such an emergency. That tends to reduce the milk supply to all towns. How that can be dealt with would be, perhaps, outside the scope of the *Commission*, but you cannot shut your eyes to the fact that it is one of the great reasons why milk is becoming scarcer than it was. If I may offer a suggestion, it would be somewhat on these lines. Agricultural labourers are being organised at the present time by the *Irish Transport Workers' Union*. It is highly desirable that they should be organised. No intelligent farmer that I have come across has anything to say against the right of the labourer to join a Union, and bargain collectively for a better way of living. What they do say is this, and it is what I have noticed myself, that the organisation of the agricultural labourer is conducted as if its conditions were identical with those of industrial labour. It is a wholly different problem, and I submit, with all humility, to the organisers of labour, that it would be well worth

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their while to consider the setting up of a separate department of organisation for agricultural labour, as distinct from industrial labour. By all means, let such agricultural labourers' Union if it will, federate with the Transport Workers' Union for common action where they can take it. But to apply the rules of other industries to the industry of farming, especially dairying, is bound to destroy the industry. For instance, how can you have a forty-eight hour week? Cows won't have a forty-eight hour week to please you, or anybody else. It cannot be done. As I say, it is not a question of wages. It is a question of intelligent understanding by the farmers of the labourers' point of view, and on the other hand, by the labourers of the farmers' point of view. If you had an organisation of agricultural labourers, as I have suggested, there seems no reason at all why that organisation and a union of farmers in the neighbourhood could not come together and settle their differences in five minutes, without all this trouble and bad feeling which it generates. It is a very important matter, and I don't wish you to lose sight of it.

To come to the actual milk production in this country, and the possibilities of developing it, there are, roughly speaking, about one and a half million cows in Ireland. These cows, on an average, would not yield more than 400 gallons of milk during the period of lactation. It has been found practicable by a judicious selection of cows, and a judicious crossing with the proper kinds of bulls, to improve the cows with a poor yield up to a point when they would pay their way. How many of these one and a half million of cows are at present paying their way I don't know. You can only know by applying the one known means of ascertaining what cows pay. That means is the universal adoption of the system of Cow Testing Associations. I have to describe these at a little length in order that the *Commission* may understand me. The members of the Cow-Testing Association pay a certain small sum per cow—2/- or 3/-, whatever it may be, for the purpose of having milk tested. It is not found practicable to have more than about twenty-five or twenty-six farmers in it, because the person who is employed to weigh the milk and test it, has each day to see the milking of one herd, supervise the weighing, and take a sample for testing. As there are four Sundays in the month he can only, obviously, deal with twenty-six herds in the month, and that limits the size of these Associations. Of course the twenty-six farmers may collectively own a considerable number of cows. The average number of cows they do own collectively is between three and four hundred.

If you get these Associations properly run, there should be one rule that the farmers should enter their cows, good, bad and indifferent. They should have the milk of these cows taken on a certain day in the month, and weighed as

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it comes from the cow. Measuring is not sufficiently accurate. The milk taken from each cow should be tested by the ordinary creamery test. Thus you get the volume of the milk of each cow, and the butter fat content. The difference between cows is perfectly amazing to people who have tried the system. What they thought was their best cow has often proved to be in reality their worst, and the cow they thought the worst has turned out to be really the best. There is nothing so deceptive as to try to judge the milking qualities of a cow by appearance, or by the quantity of milk she gives immediately after she is calved. A great number of cows give an enormous quantity of milk after they drop their calves, but their milk gradually diminishes; and if you tot it up you will find they don't give so much. Others which are less showy, may be, generally speaking, much better.

In Ireland, the milch cow is usually a cross-bred shorthorn. She is evolved, I suppose, from the old Irish breed, some of which had no horns—the maol cow—and were of a yellowish red colour. They were crossed with shorthorns, and gradually the breed became more or less crossed out of existence. These cows were good milkers. There is no doubt about that. They gave a great quantity of milk, but whether it was rich milk or not you cannot tell. It was before the days of cow testing. Any way they had the reputation of being good milkers. There are shorthorns and shorthorns. The shorthorn is not of necessity a beef animal, but you can get a shorthorn that will practically answer to the description of a "dual purpose" cow. If anything goes wrong in their milking, you can make them fat, and they will give you a reasonably good return. I have heard of a pedigree shorthorn cow that gave 1,600 gallons of milk in the year. It is quite common to get herds—pretty considerable herds—giving 600, 700 and 800 average—cross-bred shorthorns. When the Department of Agriculture was started in 1900, they had to start with improving the breed of cattle in Ireland, as well as they could. Unquestionably, they have done fine work in improving the beef qualities of cattle, but they had to buy bulls. These were very fine bulls of a milking strain. If you cross milch cows with beef bulls you gradually eliminate the milking qualities, until their heifers have not enough milk to rear their calves. A strange thing about the bull is that he has more influence on the milking qualities of the progeny than the dam. If, therefore, you use in connection with these Cow Testing Associations, bulls of a proper milking strain—with three or four milk crosses in their pedigree—you will get a very fine milking breed of cattle, which, at the same time, will be a good breed for beef purposes. I have an open mind on the subject whether it would be desirable to interfere with this well established breed by introducing such breeds

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as Friesians or Ayrshires. The shorthorn has become acclimatised and it is really hardy and suitable. I am not sure whether it would be wise to introduce another type of cow and cross them with the shorthorns. One hears of extraordinary milk records from Friesian and Ayrshire cows which are bred almost exclusively for milk. There are these record "freaks" in every breed, but if you take the average yield of the Friesian, there is no doubt that they give a high yield, but their milk is poor in butter fat. From the shorthorn you can get very often 4 per cent. and usually about 3.5 or 3.6 per cent. of fat. For an infant it is not so important to have milk rich in fats. I am not a "baby farmer," but I know that small babies ought not to get milk as it comes from the cow. It has to be diluted, or assimilated to the mother's milk. According to the statistics there has been little or no falling off in the number of cows, in Ireland not one per cent. Compared with pre-war days the number is about the same.

We want to find out how it is there is a shortage of milk, because a shortage of milk unquestionably there is. The shortage may be due to a falling off in production; or it may be due to the fact that the price has gone up to such an enormously high figure that the poor of the towns cannot buy it. If you take a country district, the labourer regularly employed by the farmer usually gets milk. The casual labourer does not. He has to look around, and he is very lucky if he gets any. As regards the poor in the towns, milk has become a luxury to them. As far as my investigation has gone, in Dublin it is simply terrible the conditions which exist in the poorer parts of the city. A great deal has been done to help in that direction by the Society started by Father Finlay in Dublin—the Dublin Food Supply Society. A great number of people don't like to be labelled as "poor." They don't wish to ask for charity, and try hard to keep up appearances. These people cannot get milk, or they are not getting enough of it. Milk is the one article of food you cannot do without. There is nothing to take its place. For the infant, the child, and the sick person, they must have it. We have got to see to it that the milk supply is increased in this country to such a degree that nobody will want for milk, but at the same time it must be demonstrated that it will pay the farmer to produce milk.

I am coming to the point that really we must concentrate on. At another inquiry which I have taken part in, bearing on this subject, we have had startling evidence given by farmers themselves. They have gone so far as to say that these Cow-Testing Associations ought to be made compulsory—that a man who keeps cows should be compelled to test the milk of these cows, and that labour should not be devoted to maintaining useless cows.

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There is nothing incompatible in eliminating the bad milkers, and still retaining for the country a thoroughly good breed of store cattle. That is the evidence we have got. It has been given by farmers themselves, and it has not been put into their mouths by any of us *Commissioners*. They also say that having regard to the fact that there are one and a half million cows in Ireland, and that you may possibly increase the milk yield by 100 gallons per cow, it would bring 7½ millions sterling into the country per annum. Therefore, it would be worth while spending some public money in bringing about the result. If you had a new supply of milk, value for 7½ millions at 1/- a gallon, I don't think there would be a man, woman, or child short in Ireland, and it would pay the farmer a great deal better than at present. I don't stop at a hundred gallons. Experience has shown in cases under investigation, that men beginning with 400 gallon yields have graded up their cows to 750 gallons. It takes some time. You cannot cut out your bad milkers all at once. Another thing, until recently, preference was evidently given to the beef shorthorn. If a man had a good bull he won a remunerative premium, and he often had a chance of selling one of his bulls to the Argentine. Therefore, it was an unattractive proposition to breed dairy bulls. Now, the Department are giving a premium of £25 for a dairy bull, and it will encourage people to go in for them. There is one thing that ought to be discouraged, and that is the sale of premium dairy bulls, before it can be judged whether their posterity are good milkers or not. At present, a man doesn't really keep a bull beyond two years. It gets heavy and probably cross. For these reasons they will sell him and get another. That means that the bull is slaughtered before you can judge whether his progeny is good or not. It may be that you have sold for beef the bull that you should have kept for several years in the country. The keeping of good, proved dairy bulls will have to be encouraged in some way. It was also suggested that in these Cow-Testing Associations prizes should be offered for the best herd that obtains the best result.

The difficulty about Cow-Testing Associations was this :—To be supervisor of one of these Associations you must weigh the milk one day every month; you must test samples from each cow and keep records. That means a whole-time working man. Now, the amount that a farmer contributes at the present time is not sufficient to pay. Therefore, it has to be supplemented out of public funds. I think a larger and more liberal Grant will have to be made for this purpose, in order to get intelligent young men to do the work. It is hard work if it be done properly; it requires a good deal of intelligence,

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and a certain knowledge of figures to work out averages correctly. It is also most important that the Supervisor should be a person of independence and be above suspicion; for it is on the records that he compiles that the progeny of those cows will always be sold. If you cannot trust the man who keeps the records, the thing is worthless. It doesn't give anybody confidence.

In the bulk of the districts where milch cows are kept the milk is sent to the creameries, and these creameries are, in the majority of cases, owned by the farmers themselves. They are worked on the co-operative plan. The farmers are shareholders in the concern, and they are organised on a democratic basis. The number of shares which any man may hold is limited. The voting power of all members is equal, and they elect a committee on a democratic franchise. The milk is not bought from the farmer as it comes into the creamery. It is tested for butter fat, and he is paid at the end of the month commensurate with the percentage of butter fat it contains, the value being based on what has been realised by the sale of butter, and the value of butter in stock, less working expenses—the cost to produce the butter. In other words, the farmer gets all the net proceeds of the butter-making.

Recently, at a very considerable number of creameries, particularly in the South of Ireland, they have taken up cheese-making. They first began by making what is known as *Caerphilly* cheese made from a mixture of skim milk and whole milk. At its best it is not bad, but at its worst it can be atrocious. It was gone into on a rather large scale. Manufacture was taken up by people who had no training, and very little knowledge of what they were doing. Anybody,—Mr. Dowdall will tell you—who makes cheese finds it extremely easy to go wrong, extremely easy to spoil your cheese. It is almost easier to make good butter than good cheese. Another thing is, that milk that is suitable for butter-making, that is, milk that is slightly acid, cannot be used for cheese-making. You can make fairly good butter, but you canot make good cheese, once acidity has set in. Then, cheese-making forbids Pasteurizing. In creameries where they make cheese they usually have two platforms; one where milk is taken in for butter-making, and the other for cheese-making. It is rather complicated where it is not properly done. People who send in good milk naturally expect to get, and do get, a much better price than the men who send in ordinary milk for butter-making.

There is one point about cheese-making. It ought not to be carried on in the winter months. In the first place you cannot make good cheese, and in the second place the milk is wanted. If you make cheese during the

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winter months you deprive the public of a certain amount of milk. Even if you make butter, it is better, because you have the separated milk and separated milk is a very useful article of food. If men cannot send milk into the town, what are they going to do with it? You cannot dragoon them—you must allow them to turn their milk into the most profitable channels they can. My own conviction is that we have rather too many regulations in this country, and that they have not always been very wise. The fewer regulations we have restraining any person connected with any industry the better it is for the industry. If, therefore, you want people not to make cheese in the winter, you must make milk sale more profitable and productive. How is that to be done? It is becoming increasingly difficult, as you will see, to carry on winter dairying. It was always difficult, and extremely difficult. Efforts have been made, sometimes with persistence, and sometimes spasmodically, to try and get people to take on winter dairying. I don't know how you are going to do it now with the increased cost of everything—the labour difficulty, and the practical impossibility of getting concentrated foods. What is going to happen?—because we cannot do without milk. You can produce from milk a powder which contains every constituent of the milk, but the water. It is an expensive process. This milk powder can be diluted and restored to its original condition by the adding of water—with all the fat and all the other solids in it. That milk can be kept practically for an indefinite time in its powdered condition. It is absolutely, as far as germs are concerned, sterile. It is not deprived of anything that is essential for infant life, nor does the drying impair its suitability for infant food, if a certain process is followed. The powder can be made during the plentiful season, and it can be supplied to cities in a very convenient and handy form to supplement winter supplies. I am not able to tell you how the price of liquified powder would compare with the price current in Dublin for milk, but I should be very much surprised if it runs to 3/4 per gallon. Whatever it amounts to, milk is essential, and it has got to be provided. If you cannot get people to produce milk during the winter months, then you must get this milk in the summer time, and preserve it in such a way as I suggest. You understand the milk shortage is not confined to cities like Dublin and Belfast. Large, and even small, country towns are even worse off. In Thurles, the other day, I came across a case of an almost absolute shortage of milk. I think I have probably, very nearly exhausted my subject, and I must have exhausted the patience of the *Commission*.

Chairman—Not at all.

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R. A. Anderson. To sum up, what I would like to suggest is this. Whether you make Cow-Testing Associations compulsory or not—and I don't like compulsion myself—we ought to aim at making them universal—to educate the people into the value of them; because after all if you show a sensible man that it is to his interest to do a certain thing he will do it.

Then, I think, we must make a persistent attempt to get more dairy bulls for the use of farmers. I should like to see dairy bulls confined to members of these Cow-Testing Associations, so that some control can be kept over the progeny.

Milk records should be carefully kept, if the remunerative herds from which the bad ones are weeded out should be our breeding centres for dairying.

I think a good deal might be done too in improving the kind of farming we have. For instance, there is a lot of forage crops that can be grown and that ought to be grown. In this country ensilage is practically unknown. I am not sure that something of this kind ought not to be encouraged as far as possible.

All this, of course, will take time. You won't accomplish very much inside half a dozen years, but it is high time a beginning was made. We go on drifting too far without making any attempt to get at the root of the trouble.

Then, in regard to Contagious Abortion which is very rife in the country, I think it ought to be made a notifiable disease. I don't think people ought to be allowed to hush the matter up. If a cow aborts it is liable to infect the whole neighbourhood, and the owner of that cow is doing an immense injury to his neighbours. The owner of an aborted cow may be against reporting it, but his neighbour would be in favour of it, and there would be sufficient public opinion to carry it through. As well as making the disease notifiable, the local Veterinary Surgeon should be provided by the Department with a supply of serum necessary for innoculation, and also with the other disinfecting treatment which must follow where abortion actually takes place. Of course, there should be isolation of that farm or that cow.

All these things will help a great deal. I think there is another thing that this *Commission* might address itself to. That is, the possibility of getting a larger supply of concentrated foods for this country than you get at the present time. It is desirable that steps should be taken to get our share. Our friends across the channel can get their allowance. We are supplying so much butter going to the other side, and so many store cattle that we are really entitled to it. I think we might make more of that. Perhaps the *Industrial Development*

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Association may have some scheme for making feeding cakes and things like that. I am afraid I have been rather too long-winded.

4. *James C. Dowdall.* Really your statement was so exhaustive that there is nothing I might ask you, but to dot the "i's" and cross the "t's." Your experience goes to show that the average amount of milk per cow is 400 gallons, or rather a little more—420. Ten such cows would give 4,200 gallons yearly. Now, taking a creamery of your own standard, you get a pound of butter from 2½ gallons. That quantity of milk accordingly will yield 1,680 pounds of butter ?——Yes.

5. 2/3 per pound would be the average?——Yes.

6. That is £189?——Yes.

7. On that 4,200 gallons you would get back from the creamery 3,360 gallons of milk ? And at 3d. a gallon that would be £42 ?——Yes.

8. Without taking the calves into consideration the yield from the ten cows would be £231 yearly ?——Yes.

9. Of course, as you pointed out, the cost of milk that goes to cities is enormously higher ?——Yes, there is no purity standard at all.

10. The point I am coming to is that no co-operative agency is instituted for supplying more milk to the city—the margin of difference is so great between the yield from butter selling, and the selling of milk in Dublin and Cork.——I think you can do something. The question is who is to do it? Is it to be done by the consumers, or is it to be done by the producers ?

11. I suggest that you could go in for joint action.——It is difficult, because their interests are not identical. The consumer wants to get good milk, and to get it as cheap as he can, and the producer wants to get as much as he can for the milk.

12. On this calculation for butter he would get 1/- one-tenth, per gallon. ——You have no trouble in the summer time It is now winter time and, of course, you cannot get milk at 1/- or anything like it.

13. I think the average all during the year in Dublin would be 2/-.——I am sure it would.

14. There is 100 per cent. available at once.——It sounds very profitable.

15. There is one point with regard to Dried Milk. You said if one process was followed it would have all the ingredients necessary for infant food What process is that?——When the milk is partially condensed and sprayed into a heated cylinder and dried by hot air. It is the *Merril-Seule* system. To the *Just-Hatmaker* system it has been objected that the milk

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when liquified leaves an insoluble sediment. It is liable to burn on the cylinder, where the cylinder is not perfectly true, and the knife fails to remove all the milk which adheres to it, and thus it will become burnt and insoluble.

16. I suppose we may mention for the *Commissioners* that the *Hatmaker* process is to put the milk in a super-heated cylinder, over the surface of which the milk is distributed, and as it dries it is removed by a knife. When the Hatmaker system was used I found a large percentage of fat, but still it has a disadvantage.——It is largely used in the manufacture of "Glaxo."

17. The finished product being so good, has it struck you, in connection with the use of Dried Milk, that having so much fat is rather a disadvantage, as it might lend itself to adulteration to a large extent.——Not being a scientist, I should prefer not to answer the question. I think you would probably get much better information from Professor Houston on that matter. I know he is very much up on this, and I prefer not to trespass on his preserves.

18. I have only one more question. It is in connection with milk machines. You tell us that they have been very largely used in Australia, New Zealand, and the United States. Have you ever seen the yield of milk by this method?——In some cases, yes.

19. The yield of milk is very small?——I don't think it is as bad as that, but I am bound to say this in answer to the question that there is a feeling that continued use of a milk machine deteriorates the milking quality of the cow on which it is used.

20. It has got a rather exhaustive trial, and it cannot milk where the yield of milk is over 700 gallons.——So I have heard. On the other hand, we have evidence of a lady in Limerick who kept only thirty cows, and now because of the machine, has fifty.

21. It has been suggested to us that in the dairy districts where milk is used for butter-making, that to increase the yield would be rather a disadvantage, in as much as it would be more economical to run 420 gallons of milk through a separator, getting out a given quantity of fat, than to run 600 gallons through, and get practically the same amount of fat.——That is one of the many fallacies. It doesn't follow that if you increase the milk yield you will reduce the fat. There is no constant or necessary relation between the fat and the volume of milk. Sometimes there is a very low fat percentage and a very small yield, and you may have a very high fat percentage and a very high yield. Of course, a cow that gives you a great quantity of milk

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with a great deal of fat in it, is a cow you have got to be very good to. You have to feed her well. She endures a great strain.

22. *T. Johnson.* I take it you are fairly well satisfied that running the dairying industry for the English markets is desirable?——I would not say it is desirable, but it fits in very well. In regard to the rearing of young stock also, it is very important, and the industry of pig feeding. In cheese-making districts they have accomplished the feat of rearing calves.

23. The present end of cattle rearing is to sell for consumption in England, and the end of dairying is to send butter to England. Not necessarily, because a large proportion is sold here—an increasing proportion. I remember a time when, taking one particular creamery I have in my mind now, sold about 25 per cent. of its butter in this country, and now it sells three-fifths of it.

24. You think it would be possible to radically change in time the general economy—that is to change the aspect from a dairying country to a cropping country?——I think you ought to have both. It is always found that if you want to carry on dairying properly, and feed your cows properly, you want increased tillage. That enables you to keep more pigs, more young stock and poultry. So the Dairying Industry is enormously important to the country.

25. Do you think that the system of dairying under present methods is more economically carried on in large dairy farms than in the small dairy farms?——Yes and no. Probably it is more economically in this way, that the big farmer can do more by machinery than the small man, but the small man has unpaid labour. I don't approve of that. He makes his family work for him, and he doesn't pay them for it. They are getting tired of it.

26. I don't wonder at that. You spoke of the difficulty in regard to labour. That is what made me ask the question, whether the large dairy farmer was economical, even with labour. You rather suggested that the labour difficulty was bound to make it impossible for the larger farmer to carry on as a dairy farmer ?——It looks very like it.

27. Do you suggest any remedy?——The only remedy I can suggest is an alteration in the method of organising farm labourers, and the establishment of Conciliation Boards everywhere.

28. I would like to know what, exactly, is in your mind in regard to the organisation of farm labourers, because my experience is, that practically what you advocate is the process in operation.——I don't think it is. In my experience we have had numbers of cases where men who were employed as

local organisers had no knowledge of agricultural conditions. Naturally, I think it is easy enough to stir up people, who are suffering from a grievance, or feeling a sense of injustice, to a strike. It is not always easy for a man who has been bred in a town, and is there all his life, to know how a strike like that is going to affect the neighbourhood.

29. May I suggest that an organiser does not stir up a strike, but that he is the man who allays it?——I don't think in all cases that they have a complete knowledge of agricultural conditions. I am bound to say that I have met some organisers of the Transport Workers' Union, and they struck me as being extremely able, level-headed, and fair-minded people. I am fresh from one experience we have had in Waterford. It was very serious there, and I am afraid there will be more trouble. That is what I have in my mind. I don't think that is typical, but it is spreading, and whatever can be done ought to be done to prevent a spread of this feeling of unrest and bitterness.

30. I think you may take it as quite certain that it is not the organiser, though he is a townsman, that foments trouble. He usually allays trouble. We find the industrial and agricultural organisation is immensely greater by the fact that they are combined, but the actual position is in the hands of the agricultural labourers, not in the hands of the townsmen.——I think I have mentioned that so far from the farmers resenting organisation, they told me, in many cases, that they would prefer to see the labourers organised; because it is so easy to deal with an organised as against an unorganised body.

31. It is coming to that now. I want to ask you a few questions in regard to the relative merits of a small holding as against a large holding. Have you any experience as to the working of a number of small holdings co-operatively ?——No, we have no experience of that here, but I think it would be a very desirable experiment to see tried. I am very anxious to see it done. If I might suggest how I would set about it. I would not aim at getting the very best land, but fairly good sound tillage land. I would proceed to erect my houses fairly near together, so that the people you would put on the land would live a communal life. You should give to each household a certain amount of land for intensive cultivation purposes, and I should have a large "out-field," or common grazing field. If you cut up a large tract of land into small holdings you lose much valuable land through fences. That is waste, and further it is not good for the cattle to be confined sometimes within trifling areas. There should be water in some part of the land, all having access to it. If you have a village community, they ought to be a very happy lot. You can make them very comfortable. If you have

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it under a committee, with one really efficient man as foreman or director of operations of the community, you can then do what is very much needed—you can arrive at the cost of production. Now, we have all sorts of wild statements, but nobody knows what the cost of production is. Here is the greatest industry we have, and nobody knows the cost of running it. If you go into any spinning mill in Belfast, you find that every single process is taken to the minutest decimal point, but we know nothing about agriculture. If you ask me what should be the price of milk, I could not tell you.

32. Let us take the allotment.——I don't think the allotment is very much good. It is a good thing that a man should have a garden, but it is a great mistake to give him either too much or too little. If you give a man land at all, you must give him enough to make a living out of it. If you don't do that, then give him a garden.

33. Supplementary to a farm?——It would depend. For instance, if people wish to go in for fruit growing; you might have small holders and you might have other things. For example, if it was near a city, you might go in for vegetable raising.

34. Would you favour a combination of consumers, and a municipal combination to undertake, say, a dairy farm, for the purpose of arriving at the cost; then going into direct alliance with the co-operative farmers. Having arrived at your cost, they could buy and sell at that standard price.——In the case of the *Plymouth Co-operative Society*, they have three farms, two of which they have bought out, and they rent the other. They treat the farms like ordinary farms, and they can tell you to a fraction what it costs to produce things.

35. *T. Johnson.* Do you know what they cost?——I could not tell you straight off Mr. Johnston, but they showed that the price was considerably less than one would expect it to be.

36. *Chairman.* Can you let us have the figures?——I think I can.

37. *T. Johnson.* Did it tell you the cost of distribution per gallon?——Yes, it came to from 4d. to 5d. in Plymouth. They distributed the milk to everybody. I think they supply 175,000 people daily. They use push barrows and vans. Of course Plymouth is very hilly. They distribute the milk from house to house and do it at present at a fraction over 5d. per gallon, which includes the cost of Pasteurisation, chilling and all expenses.

38. Even to-day?——Yes, but they only distribute once a day. They won't distribute twice.

39. Objection has been raised to early morning milking. It has been

suggested that it could be got over if people in the cities will not demand absolutely fresh milk.——They have to do it. There is a ridiculous custom of selling milk "hot from the cow." It is a greatly overrated delicacy. They get other things hot from the cow too.

40. Do you know what the cost of distribution in Belfast is?——I don't know what it costs. It was suggested to us that 5d. was ample.

41. *E. E. Lysaght.* What astonishes me is that you, not being a practical farmer, know so much about it. I want to know how a 48 hours week is not possible on the farm. Is it not already in operation ?——I am not aware that it is. I can't see how you can work it.

42. I have 49½ hours week. A man gets a half-holiday, and one Sunday out of three, and so on.——Probably you have no difficulty in getting milkers. You may have relays of milkers.

43. Practically every farm hand can milk, or can learn to milk quickly.——It may be so in your locality, but I assure you the evidence I listened to the last few days is that they will not work. It is not a question of wages, but that they won't do it. They won't tie themselves on Sunday. I would like to see a 48 hours week, myself.

44. Referring to a cow being sung to and so on, you said if a cow is roughly milked she gave less in quantity, and less in quality. Can you prove that is a fact ? It is a very interesting point. I have heard it before.——It is one of the things I have learned by reading and talking to people who gave me their experience. I cannot tell you from my own personal knowledge.

45. As a practical farmer I don't see how a man could know that.—— Several people told me that the custom used to be to milk them in the field in the summer. Now they are driven to the byres, and so sometimes when dogs worry them, or even the warble fly sets the cows running about in hot weather, both in quantity and quality the milk has deteriorated.

46. *John Sweetman.* There is one thing I am sure you will make clear to us. That is, that any man who takes up dairy farming, and is keen about treating the cows properly, will probably be able to raise the yield of the cows from about 400 up to about 600 gallons. I know a neighbour of my own who won't keep any cow that will not give over 600 gallons. He claims to have brought them up at least 50 per cent.——Yes.

47. And in your experience the butter fat yield does not fall ?——Oh, no, not at all.

48. You could increase the yield and still improve the quality ?——

Provided you stock the same breed of cattle. I don't think if you use Friesians you would get quality.

49. *James C. Dowdall.* Even if the percentage of fat in lavish milk were small, you still get more milk ?——Yes.

50. *Colonel Moore.* With regard to the breeding of bulls and cows, I understand there are stud books for cattle. Are there herd books for milking cattle ?——Yes, there is a Dairy Herd Book now.

51. Has that been long established ?——Some years.

52. *David Fagan.* In respect to the cans in which they convey the milk, I know the railway system is abominable. They throw the milk anywhere they like. The present formation of the lid is something like a convicts cap. In both sides there are hooks, and in tilting the milk up it gets into the hollow, and as a rule it is full of dust; and that dust is conveyed back to the milk?——Yes.

53. In other countries the lid is round on the top. I suggest if the lid was round, it would prevent it getting so much dust as at present?——I should like to understand the question. As I understand it, the lid has a groove in it and there is a sort of an island in the middle. Your idea is, that instead of that you should have a lid more convex, so that nothing can run back into the can.

54. Exactly.——I think probably that would be a good thing. I don't know where this particular type of can lid is made. It is being made for a long time.

55. *David Fagan.* Is there any means of getting the cans sterilised before they are sent back to the farmers ?——Undoubtedly, if you had a proper place to leave the milk. A man will sterilise a can in $2\frac{1}{2}$ minutes.

56. At the present time the can goes back from Dublin and the farmer has no means of sterilising it. I don't know what is done in the creameries.——They usually have a thing called a Swedish can washer. It is not the practice to sterilise cans. It would be an awful big job to do it.

57. With regard to abortion, what way do you propose to notify it?——Through the police, in the same way as you notify sheep scab. The point I make is, if you make a disease notifiable you ought at the same time to make suitable arrangements to deal with it locally.

58. *David Fagan.* I think it would be better to get the local authority to do it.

59. *John Murphy.* Mr. Anderson has stated that formerly the milking was practically done by girls, and that latterly it is done by men, to the advantage of the yield.——I didn't say that.

60. It was a deduction of my own. Would you go so far as to think it wise to return to the old system—to encourage girls and women to take on the milking again ?——I think it is more a job for women than for men.

61. *P. Keogh.* Would you advocate a wider diffusion of native breeds—Kerries, for instance ?——In some districts Kerries have given a very good return. Some Kerry cows have given up to 1,000 gallons, with 4.5 per cent. of fat, in certain districts. They are very suitable. They are extremely hardy, and almost tubercle proof. Moreover, they are easily fed.

62 Has any effort been made to segregate or keep the old *maol* cow as a separate breed, either by the Department, or the I.A.O.S.?——I am not aware of what the Department have done. It is not the business of the I.A.O.S. to do so.

63. *T. Johnson.* You spoke of the big farmer breeding fine stock. Is that your experience, because I find the small farmer is the man who breeds the finer stock. I am speaking now of the North of Ireland. Take Cookstown ?——Cookstown is absolutely unlike any other part of Ireland. There they breed shorthorn bulls for the Argentine. They have sufficient cows to rear each bull. I hope you are not going to advocate that system for general adoption—when you have the milk of three or four cows going to rear one bull.

64. There is no reason why the small farmer should not breed a fine cow, as well as the large farmer?——There is no reason, except the question of expense. The small farmer unquestionably can breed as good dairy cattle as the biggest man in the land. What you want to get, at the moment, are expensive bulls. These bulls may cost £500 or even more. The small man cannot afford the money. He cannot take the risk, unless the thing is done co-operatively or nationally.

65. *Professor Ryan.* Mr. Anderson, I think you hold that some cases of increased yield are followed by a diminution in the amount of fat.——I don't agree at all. That is contrary to experience. You can underfeed a cow and make her produce less fat, but you cannot increase the amount of fat.

66. That is recognised ?——You may possibly make a slight difference for a few days. The expense of doing it is a great deal more than the value of the milk. You can starve a cow so that she would give you no fat.

67. *Chairman.* On behalf of myself and my colleagues, I wish to thank you sincerely for the patience you have had with us.——I assure you it will give me great pleasure to do anything I can. If I can give you any help in your valuable inquiry in my private capacity, I shall be pleased to do so.

EVIDENCE OF T. A. LUCY, *President, Creamery Managers' Association.*

68. *Chairman.* Mr. Lucy, I understand that you are President of the Irish Creamery Managers Association ?——I occupy that position——And Manager of Callan Co-Operative Creamery ?——Yes.

69. *Secretary.* This is the evidence Mr. Lucy asks me to read for him—Reading :—

" Dairying is, and must always remain, one of the chief industries of our country. In soil, climate and geographical position, Ireland is admirably suited to the production of milk and its products, and should be able to hold its own in this respect with any country in the world.

" Dairying is not merely of importance because of the revenue derived from the sale of milk and milk products. Around it revolves, and upon it depends, the industries of calf-rearing and bacon production; so essential to progressive farming. Through the housing of the milch cows during the winter months, the farmer is provided with an abundance of the best fertilizer in the shape of farm-yard manure for enriching the soil. Much greater employment is given by dairying than by the mere production of beef, and on the whole it is generally well suited to the agricultural economy of the country.

" Butter making has always been the main industry of dairying in this country. Up to about 30 years ago it was carried on in the individual farmer's home, and even under that unorganised system, such butter had a good reputation in the British markets. It cannot be said that our forefathers did not know how to make good butter, as many farmers who continue the old system make it to-day; but, unfortunately, abuses crept in and Ireland was losing its reputation in this respect. The adoption of the creamery system in Denmark made a change in the methods absolutely necessary, if the industry was to be saved. The Danes were able to supply a butter of fine quality, and what was more important, it was turned out under ideal conditions, and above all it was uniform in quality; whereas the merchant who bought Irish butter had as many different qualities as the number of individual farmers from whom he purchased. Some good, some indifferent, and some bad. The result was that the consumer of Irish butter could not rely upon getting good butter, or the same quality from week to week; whereas in the case of Danish butter he could always be sure of obtaining a reliable article. Accordingly, the price of Irish butter in the eighties fell very low—in fact, down to 6d. per pound or less—and there was, therefore, not merely a loss of remuneration, but a financial loss of several millions sterling annually.

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" The introduction of the centrifugal separator and the adoption of the creamery system changed all this. The former not only extracted the cream in a much more rapid, complete and economical manner, but caused an increase in the yield of the butter of about 20 per cent. from the same quantity of milk. The latter, by dealing with the milk of all the farmers in a district within a radius of three or four miles, by the use of labour-saving machinery, the employment of skilled workers, and better business methods, turned out a superior and uniform article which satisfied the more critical taste which the British consumer had acquired, and this butter freshly made was sent direct from the producer to the distributor in Great Britain.

" The first "Creamery" appears to have been started by a Canon Baggot, in Hospital, Co. Limerick, but was not on the centrifugal system. He merely collected cream from the farmers, and each "patron's" cream was churned separately. This is not the system of to-day. About the year 1889 a creamery was erected by Messrs. Blount and Merrick, at Limerick Junction, and some on the joint stock company principle by farmers in North Cork and County Limerick. Later, several co-operative creameries, registered under the Industrial and Provident Societies' Act, were established by the English Co-operative Union, the work of which, in 1894, was taken over by the *Irish Agricultural Organisation Society*. The Hon. (now Sir) Horace Plunkett, and Mr. R. A. Anderson were from the first prominently engaged in the organisation of these creameries.

" The Co-operative Creameries to-day number 465, viz., 213 Centrals and 252 Auxiliaries. The Proprietary Creameries, under 218, viz., 83 Central and 135 Auxiliaries. At the Auxiliaries, the cream is merely separated from the milk and carted to a Central to be churned into butter. The Centrals not merely separate the cream from the milk sent by the farmers of the locality, but also manufacture it into butter, together with the cream of any Auxiliaries they may receive. A Central usually deals with anything from 1,500 gallons to 5,000 gallons daily, and employs a highly trained manager and a staff of from six to twelve persons according to its size. An Auxiliary, or separating station, deals with 500 to 1,500 gallons, and employs two or three persons only.

" The equipment of the Creameries at the commencement was simple compared with what it is to-day. They differed only in capacity from what might be found in any large estate dairy. To-day, the plant of a large Central creamery is a very elaborate and complex affair. Cornish boilers, Separators capable of skimming six to eight hundred gallons per hour, Pasteurisers, Refrigerating Machines, Cream Ripening Vats, Deep Wells, Laboratory, Combined

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Churns, and Butter Workers, and several other labour-saving machines.

" There is a complete control of temperature. Water can be brought down to freezing point, or milk raised to boiling point. Cream can be converted into butter, ready for packing without any human exertion beyond the slipping on of a belt.

" The staffs employed have also attained a high state of efficiency.

" The Manager must now serve a period of apprenticeship which includes a course of ten months training at the Royal College of Science, where he receives instruction in business methods, dairy technology, engineering, elementary chemistry, bacteriology, physical science, drawing, etc. The butter-maker must also have spent a few terms in a dairy school.

" The *Creamery Managers' Association* refuses to admit to membership managers who have not undergone the prescribed course of training, and its efforts in promoting increased effciency have been of incalculable advantage to the industry. It has an elaborate system of market information which is supplied to the creameries daily. By its publications, its co-operation with the Department of Agriculture and the I.A.O.S., and in various other ways, it has been helpful in improving the industry. It was in a large measure instrumental in the formation of the present *Butter Export Committee* which is composed of representatives of all sections of the Industry, has charge of the grading of Irish butter in Great Britain, and has secured practically complete autonomy so far as its work in this respect is concerned.

" The grading of butter instituted by this Committee may well be said to be the salvation of the industry, for without it under present circumstances the worst quality butter would sell at the same price as the best.

" During the war butter making has suffered a severe decline, due to a variety of circumstances, chief among these being :—

(1). The reduction in the milk supply, into the causes of which the Department of Agriculture is now inquiring. This decline is, however, now happily arrested, the supplies this year being equal to, if not exceeding, 1918.

(2). The great development of the cheese industry due to the remunerative prices received for that commodity during the war.

" The exports of cheese for this year will probably be little less than the exports of butter, or about 15,000 to 16,000 tons. Prior to the war there was very little cheese made in Ireland; but during the past few years factories worked in all cases in conjunction with the existing creameries, have been pushed up rapidly—mainly in the South—and at the present number about 180.

" It is, however, probable that with the increased imports from Holland,

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Australia and Canada, cheese will not maintain its present remunerative price, and that the production in Ireland will not in future years be so large. On the other hand, butter is likely to be very scarce for a long time to come, and therefore, the price will be at least maintained, and the make will consequently increase. It is not likely that butter-making will easily be displaced from the position which it always held, and it would be a pity if it were, because in many respects it suits this country, and is already mentioned as having other subsidiary industries depending upon it. On the other hand, there is no doubt that each of those creameries, which has now a second string to its bow, will continue to manufacture some proportion (varying according to price obtained) of its milk into cheese, even if the price of the latter shows little or no margin of profit over butter. This would occur owing to the many farmers who would prefer to sell their whole milk, instead of taking back skim-milk as they would do in the case of butter-making.

" Condensed milk is manufactured by one firm in Ireland, which has factories in the counties of Limerick, Tipperary and Cork. Dried milk is also manufactured, but to a very limited extent.

" Whether there is much scope for the development of these latter industries is a very debatable point. They involve a considerable amount of capital, and being non-perishable, Ireland would not have the same advantages in competing with foreign countries as in the case of butter. It is possible that if carried on to a limited extent they would pay.

"The average milk yield of Irish cows is estimated at 420 gallons, and the total cow population about 1,200,000. It is fairly certain that the average yield could be increased by fully 50 per cent. which would mean an addition of 252,000,000 gallons, worth at least nineteen millions sterling. This immense addition to the wealth of the country could be secured by weeding out the unprofitable milkers and replacing them by animals bred solely for their milk producing qualities. The tendency, however, has been heretofore to favour the "dual purpose" cow, but whatever justification there may have been for this practice when milk products were sold at a low price, there is very little at present; because a cow capable of yielding 600 to 650 gallons would not be by any means useless for beef production. At present, most of the cows are neither good beef producers nor good milkers. It is only by the keeping of individual milk records that the above result can be secured. An impression prevails that an increase in the quantity of milk produced, can only be obtained at the expense of quality, but this is by no means the case. It is true that there are, at present, many cows which give a large quantity of poor milk, but these are

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not of the right milking strain, and there are also certain breeds, such as the Kerry, which give a small quantity of milk rich in fat; but taking the dairy industry as a whole, a cow can be produced capable of producing 600 to 700 gallons and upwards, yielding a high percentage of solids, and therefore suitable for either human consumption or for the manufacture of butter, cheese or other products. Some progress has been made in improving milk yields through the establishment of Cow-Testing Associations, and many individual farmers have graded up their herds to the average mentioned. It is, however, difficult to get farmers to realise the immense possibilities in this direction, and many of them are not disposed to take the trouble to weigh and test the milk of each cow, though it is not necessary to do so daily. The weight and test of a day's supply taken once a fortnight is quite sufficient. By concentrating on favourable districts, here and there throughout the country, by the adoption of a vigorous campaign to enlighten the farmers in those districts on the great possibilities of improvment in this direction, and by the subsidising of Cow-Testing Associations, the desired result could be achieved. Other districts would ultimately follow their example, and every farmer would see the necessity of keeping no cow which did not yield him a profit.

A few statistics of exports, prices, etc., may be of interest.

TABLE OF STATISTICS ON OPPOSITE PAGE.

STATISTICS HANDED IN BY T. LUCY AND REFERRED TO IN HIS EVIDENCE ON PAGE 30.

(1)—EXPORTS OF IRISH DAIRY PRODUCE. QUANTITIES.

Year	Butter	Cheese	Condensed Milk	Milk and Separated Milk	Cream	Casein and Milk Powder	Average price f.o.r. of Irish Creamery Butter
	cwts.	cwts.	cwts.	cwts.	cwts.	cwts.	
1904	815,783	1,142	252,745	——	19,019	——	——
1905	813,921	921	291,538	——	19,019	——	——
1906	844,027	1,222	176,660	——	17,296	——	——
1907	818,004	2,460	290,183	5,418	6,058	——	——
1908	751,942	3,231	283,829	19,452	3,864	——	109/8
1909	719,625	4,015	274,842	1,605	10,351	——	107/-
1910	698,907	3,365	292,346	5,836	13,809	——	108/4
1911	688,362	6,031	254,560	7,164	15,162	——	115/-
1912	778,778	5,451	246,723	5,271	13,016	4,810	115/2
1913	725,368	6,102	270,362	3,637	16,836	270	113/-
1914	855,608	9,591	309,658	4,917	26,947	——	116/10

(2)—QUANTITIES OF BUTTER IMPORTED INTO THE UNITED KINGDOM DURING THE YEARS SPECIFIED.

Countries	1900	1905	1910	1915
	cwts.	cwts.	cwts.	cwts.
Russia	209,738	467,896	584,040	1,017,507
Sweden	196,041	242,130	345,684	129,505
Norway	26,085	31,773	22,081	——
Denmark (including Iceland, etc.)	1,486,342	1,578,541	1,729,399	1,327,100
Holland	36,042	4,629	3,481	——
Germany	282,805	209,804	154,537	44,622
Belgium	78,771	143	——	
France	322,048	377,606	361,249	352,090
Italy	857	52,661	9,028	——
United States of America	56,046	86,217	756	77,130
Argentine	27,098	77,013	65,944	82,947
Other Foreign Countries	63	1,587	94	——
Total from Foreign Countries	2,721,936	3,095,000	3,276,293	
British East Indies	1,045	1,425	1,767	——
Australia	353,157	459,333	667,966	371,670
New Zealand	163,871	300,418	362,674	374,898
Canada	138,313	290,774	16,805	24,401
Other British Possessions	194	916	34	——
Total from British Possessions	656,580	1,052,866	1,049,246	——
Total Imports from Abroad	3,378,516	4,147,866	4,325,539	3,855,395
Imports from Ireland	——	813,921	698,907	838,089

(3)—IMPORTS OF DAIRY PRODUCE AND MARGARINE INTO IRELAND.

Year	Butter	Cheese	Condensed Milk	Margarine
	Cwts.	Cwts.	Cwts.	Cwts.
1904	55,258	42,309	19,704	36,610
1905	53,643	41,095	17,463	42,327
1906	56,399	40,579	18,780	44,456
1907	63,258	44,445	16,824	40,187
1908	62,918	36,159	18,913	46,243
1909	68,347	42,611	18,831	45,680
1910	77,945	43,560	21,280	54,376
1911	88,472	46,573	29,791	56,163
1912	65,731	42,986	38,436	75,470
1913	71,585	45,157	33,496	83,807
1914	73,935	54,838	24,683	86,434

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70. *James C. Dowdall.* I see, Mr. Lucy, you corroborate Mr. Anderson on the importance of Cow-Testing ?——Yes. You put it that the 420 gallons might be raised 50 per cent.——I think so. It could be surely raised to 600.

71. Are there any Cow-Testing Stations in your area ?——No. They have not been anything like a success. The great difficulty is to get the farmers to do what is really required of them.

Chairman. Mr. Dowdall asked is there one established in your area ?——No, not in my immediate area.

73 *James C. Dowdall.* I take it, all of you in the *Creamery Managers' Association* might do a great deal in drawing attention to the desirability of Cow-Testing ?——The *Creamery Managers' Association*, and all Creamery Managers, have done all they possibly could, but their time is limited. They can do very little in the matter of propaganda work, but what they really can do has been done, and they are only too willing to do it, and to give all possible assistance.

74. I am very pleased to hear this. In fact I have made a dozen attempts with my own people to start one and I have not succeeded. I have not given up hopes however.

75. I see by the abstract which you have attached to your statement that the average for your district is above the general average ?——440 gallons per cow ? Some time ago when food-stuffs were more plentiful I found it was pretty close to 500. Figures which I have sent you are later-day figures.

76. You give us the complete quantity of the milk supply ?——Yes. Previous to 1914/15 and 1913 I tried several farmers and I found they would average practically 500.

77. *James C. Dowdall.* I am pleased to hear that, because I see you produce one pound of butter per 2.4 gallons of milk ?——Yes, something like that.

78. That goes to show even in a moderate way that the higher yield of milk does not go with the lower percentage of fat ?——Oh no. In reading the statistics which have been published by the Department of Agriculture from the various Cow-Testing Stations in the country, the theories on that subject have been found to be wrong. It was formerly believed that the cow which produced a large quantity of milk always had very poor milk, but in every case which has come under my notice, it has been proved that several cows which have given even 700 or 800 gallons, have certainly given a larger percentage of solids in the total amount for the year; and very often a larger quantity per 100 lbs. or per cent., than the cows which only gave perhaps half the amount

79. Of course I knew that before. Cows carefully selected and properly treated give a large percentage of fat.——Certainly.

80. You make butter and cheese ?——Yes.

81. I presume you began cheese-making during the war period ?——1918.

82. That has been the case of a great many Creameries ?——Yes, with practically 75 per cent. of the creameries that are making cheese to-day.

83. Now, Mr. Lucy, I want to know—you understand I made cheese fairly largely myself many years ago, and I know it is a difficult process—I don't think I am wrong in saying that a great deal of the cheese produced did not give satisfaction ?——A good deal of the *Caerphilly* cheese that was produced did not give satisfaction on the whole. I have been in London lately and I have seen Irish cheese there and English cheese from districts where it has been made for years, and I must say our make compared favourably with the British manufacture.

84. I am sure you make good cheese.——I beg your pardon. I say our make. For that matter, all compare favourably with some of the Colonial I saw. The drawback I found was that some of the Colonial cheese had a better opportunity of ripening on the journey which ours had not.

85. Yes. That is rather important. The question of ripening. There were many complaints of Irish cheese running bad in the spring.——All these complaints, so far as I know, referred to Irish *Caerphilly* cheese.

86. I will put it to you, that what has happened is this, that some managers had used too much of a proportion of skim-milk in their cheese ?——In the manufacture of *Caerphilly* cheese there was certainly a large percentage of skim-milk used, and in some cases there might have been a little too much. I would like to say that application was made to the *Butter Expert Committee to* standardise cheese under similar conditions to butter, but the British makers raised an objection.

87. I did not know that.——We had no hesitation in toeing the line, and we constantly fought that. And others should do it too.

88. You were in the Creamery business long before the war ?——About twenty years.

89. And did you in times previous to the war, during the summer months, find difficulty in selling your butter ?——Oh yes.

90. Did you find you had to sell butter at very low prices ?——Yes.

91. I sold thousands of packages myself at 78/-. I put it to you now that if there was more butter than even speculators would care to take, it would pay

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creameries to turn some of their milk into cheese ?——That would depend upon circumstances. There would be a better, and far better, way out of it in the future.

92. What way is that ?——In the past, whatever it may be in the future, we have had to sell our butter to Great Britain. We ran the risk of a glut; and there was butter in various conditions. What was sold as creamery butter was not always the best, and our creamery butter suffered as a consequence. It is up to us, Irish Managers, to prevent such an occurrence, and to turn out butter which would be of as good keeping quality as the Danish butter. I think the country can produce first-class butter, and they can go in for a system of cold storage for individual creameries, or a combination of creameries, and if there was a glut of butter in the summer months, to hold it over. That would enable us, first, to supply our Irish towns without going to the expense of importing, as we were importing previous to the war, large quantities of Danish and Colonial butter. It would go further. It would mean that there would be a more even supply throughout the twelve months of the year. I think we could elaborate that: there is a good deal of money now available to enable us to act on that system.

93. I suppose Danish butter got higher prices ?——When there was a glut it was found they held their supplies until the market improved again. We were never in a position to do that. We were not sufficiently organised and we lacked capital. Our creameries were not the thing.

94. I agree with you.——There is no use praising ourselves.

95. They are greatly improved and there is room for improvement still. Have you cold storage attached to your creamery ?——No, but I hope to have soon.

96. I put it to you that not only did the Danes hold back their butter during the summer months, but that they produced nearly as much butter during the winter as during the summer ?——Not entirely.

97. But very largely it was so ?——They were much larger winter producers than we were.

98. We don't produce in winter at all, practically speaking ?——No.

99. And of course, with the price of milk now we don't produce butter at all ?——No.

100. Do you think that the Danish butter had a priority over ours, apart from price ?——No. It was on the grocer's counter and there was a prejudice against having ours—that was, it was a come-day go-day business for Irish butter; they had always to look underneath the counter.

101. You have no difficulty in disposing of the whey from cheese ?—— There was a prejudice against it, but in order to convince everybody that it would do no harm I got some pigs and fed them on it myself. Everybody wanted it lately when feeding stuffs became scarce.

102. Do they feed it to calves ?——No. People only give a quantity of their milk for cheese-making. We make a point of selecting the best of the milk for the purpose of cheese-making.

103. I see in 1913 thirty-three per cent. and later 50 per cent. of your butter output was consumed in Ireland on an average ?——Yes.

104. What proportion of your plant, separation boiler, fittings, etc., is made in Ireland ?——There was none of our plant made in Ireland, bar our cheese-making plant.

105. Where are the cheese presses made in Ireland ?——The Hammond Lane Foundry did them. There are a dozen manufacturers of these articles in Ireland.

106. Do you think it is impossible to make some of the butter plant in Ireland ?——I think the whole lot should be made in Ireland, bar the large boilers. In fact I went at one time to make an attempt to see if we could have these made co-operatively.

107. Do you recommend Dry Milk ?——Well, I have no great experience of it, except to have it as a string to our bow, in case there was a drop in prices of stored stock, or if the farmers did not want to raise so many calves.

108. Is there any special circumstances to account for the higher butter yield in your locality ?——The land is good.

109. Did you make any particular study of the treatment of cattle for the yield of milk ? Any particular food ?——I am a farmer's son. I got some education in an agricultural college and I have read a little, but I have no great practical experience of land for twenty years.

110. Do you believe the regularity with which cows are milked—the regularity of hours—is likely to increase or diminish the supply ?——No, but I am sure of it.

111. In your district are cows regularly milked ? At practically the same hour every day ?——With the small farmers, yes; but in the case of the larger farmers, who have to depend on hired assistance, there is some irregularity, and larger farmers have complained to me that it is a most serious cause of some of their cows going wrong.

112. *Mr. Johnson.* In your district are the farmers mainly large farmers ?——No, we have not so many large farmers. We have twenty or

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twenty-five that you would describe as large farmers, out of 260.

113. What would you describe as a large farmer ?——I regard the man who milks fifteen cows or the man with a hundred acres of land.

114. I am not quite sure whether I understand the evidence rightly but I put down a line that the decline in milk production is now happily being arrested ?——Yes.

115. Is that correct ?——That is correct, but, perhaps, the season was only to account for that. This has been an exceptionally fine season. We had not a very warm summer, and the milk yield kept up in the month of July though in previous years it ran down at that time

116. Is it the suggestion that the decline of milk production has been progressive for several years back ?——No, our largest milk supply was in 1915-1916. In 1918 it was less, but that was due to the war causes, as far as I know; because as things were there was no concentrated food available in the spring, with the result that the cows went on the grass thin, and they did not milk as well throughout the whole year as they would have milked otherwise, if they went on with the same condition, and if concentrated foods were more easily procurable.

117. Was there a supply of concentrated foods this spring ?——No, there is no concentrated food of any importance available yet.

118. With regard to cold storage, do you think local machinery for cold storage would be effective, or do you approve of a central cold storage ?——In the case of the large creameries, I should say it would be effective, but in the case of smaller creameries, I think it would be otherwise.

119. Has there been any suggestion about the federation of districts for the purpose of farming ?——Yes, such a movement is going on at present for the counties of Kilkenny, Waterford and Tipperary, but nothing as yet has been established.

120. There are cold storages in Dublin.——There is an amount of cold storage available in Dublin and Cork, but it is not sufficient for the needs of the country. They were chock-full early this year.

121. Has there been any other country than England to send butter to ?——There has been, but that trade has been confined, not to the creameries exactly, but to the makers of factory butter who send butter to the colonies.

122. That is stored in tins and would be mainly for ships' use ?——Yes.

123. Have you had any market at all in the world except Great Britain ?——No. Up to 1914 we had to export butter to England, and I am afraid we will again.

124. Do you think there are a lot of people in Ireland who do not get enough butter ?——There is more butter used in Ireland than there was used ten years ago. I think, on the whole, the people of Ireland have been better fed than they were. I know they have in the country districts.

125. Had wages anything to do with that ?——Certainly. The wages paid to an agricultural labourer some time ago were not enough.

126. Have you any knowledge or experience as to whether a man works more heartily on better food than when he was half starved ?——My experience of the Labour Movement up to the present is that it has tended, unfortunately, to make labourers more discontented.

127. Do they work more heartily ?——No, not a bit of it.

128. Is their any possibility of the labourer becoming a farmer in this country ?——I am sorry to say not. I wish there was. In my early days a labourer got something at the farmer's house in addition to wages—perquisites. When the wages increased the farmer became tighter. Now, there are a good deal of labourers, I am sorry to say, who live on bread and tea. I consider it a pity, in addition to looking for increased wages, that they haven't looked for perquisites—a piece of manured ground every year to plant some potatoes on and so on. Then they have plots attached to their cottages which in many cases, are more or less small grazing ranches. All these things could be done away with and healthier families would be reared.

129. Is it a fact in your district, for instance, that there is a very clear social division between the farmer and the labourer ?——The division is, I am afraid, getting clearer, and I regret it.

130. But there has always been a division, hasn't there ?——The way it is is this. Where I come from in Co. Cork the division was not as much as where I live presently. It has tended in this way. The modern movement has made the labourer more self-reliant.

131. *Professor Ryan.* How do you drive your factories ?——Steam.

132. What is your power ?——About 45 H.P.

133. How many hours a week do you work it ?——About fifty-two hours.

134. How much coal do you use per week ?——In summer time we use about six tons.

135. What is the cost per ton ?——£4.

136. Do you use bituminous coal ?——Yes.

137. Where do you get it ?——Everywhere we can. Probably Waterford.

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138. It is imported coal ?——Yes. We have to pay 10/- cartage to the creamery.

139. I take it the Kilkenny coal doesn't suit you ?——Castlecomer coal has not been tried for that purpose as far as I know.

140. *E. E. Lysaght.* Do you ever take a test of the strippings ?——No.

141. Have you any reason to believe it is much richer than the rest of the milk ?——I have always heard so. I have tried it about once and I found that was so.

142 I found them to be so. There is another thing I want to put to you. Don't you think you made a statement which is not quite sufficiently strong in saying that the tests for Cow-Testing should be taken once a fortnight ?——I think once a week is better.

143. Do you think once a fortnight is quite reliable ?——Yes, I think so, on consideration.

144. *Roger Sweetman.* You stated you corroborated Mr. Anderson's evidence on the point that the yield of milk should be improved 50 per cent. by proper means. Would you say that may be brought about by breeding cattle ?——Cows must be properly bred.

145. That is my point. When you mention 50 per cent. improvement, if it is to be by breeding only, you bring about the increase of the wealth of the country by so many millions, whereas if you take the cost of food the increase may not be much ?——There was an experiment carried on by the English Department of Agriculture. It appeared in one of their journals about two or three months ago. I forget now the exact figure, but at the time it was more profitable.

146. Would you state this, that by selection and breeding alone you can bring about a very large increase in the yield of milk without touching the question of food at all ?——Oh, yes. In fact, the extra amount of food need not be so much, but it should be something.

147. With regard to Kerries, in which I am rather interested, do you recommend Kerries ?——For small farmers and mountainous districts, there is a good deal in them; and for villa farmers, or in towns, there might be something in them, but the great objection to the Kerry cow is, her stores are a poor market.

148. Another small point. This question of the glut of butter which sometimes occurs ?——It was always great in pre-war days.

149. It seems to me there are two remedies, one cold storage, and the

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other to feed the people in Ireland with Irish butter, which, I think, is the better remedy of the two. There is a small but very important market in France at the present time for butter.——France in pre-war days exported a considerable quantity of butter to England. When France gets on her feet again she will probably do the very same thing.

150. *David Fagan.* Mr. Lucy, regarding the slump in butter, when the slump comes in Irish butter, isn't it because of an overplus of butter from Denmark ?——It is more from an overplus of Irish butter being placed on the market.

151. You speak about winter dairying in Denmark. Do you believe in that winter dairying ?——We tried several experiments in connection with it, and we offered a bonus to everybody who would send us milk. When it was looked upon as a very good price to pay 6d. per gallon for milk in winter, we went further and offered a bonus of 1d. to every farmer who sent us one-fifth of his June supply, and the farmer didn't even continue it. They didn't continue after sufficient inducement, so we gave it up; as they came to the conclusion that even it would not pay them at that. A great objection is, they didn't see the subsidiary advantages that accrue from winter milk production in itself. In the past the prices that could be paid on the manufacture of butter and sale of milk in local towns were such as would make production of milk in itself unprofitable for the farmer, but he had the advantage, which, perhaps, he didn't always see, of having a larger quantity of manure made and in having better and healthier calves.

152. Would you consider that a system of education on the means of carrying on winter dairying, would do any good? Supposing the County Councils, through a system of scholarships, were able to send, from dairying districts in their own counties, ten young women and ten young men every year to Denmark. If they were apprenticed to farmers who carry on dairying, don't you think they would be a good means of establishing winter dairying in Ireland ?——No, because we have been very conservative. I have known farmers to send their sons to agricultural colleges, and when the sons came back with new ideas, and tried to put them into force, they could not get their fathers to adopt them. I think, then, it would be only a waste of money to go sending them further. What has been a great drawback in the past to the production of winter dairying, and seems to be lost sight of is, that the house on Irish farms is not such as would tend to it. All the houses have been more or less poor, on the smaller farms especially. I think something should be done in that line to help the small farmers, in the first instance. If

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men who carry on farms, say of forty acres or so, could get cheap loans, and pay interest, as in the case of holdings that might at one time be called uneconomic holdings; or by the same means that labourers' cottages are now built, it would benefit the country in many ways.

153. With regard to the Irish butter and Danish butter, would you be right in saying the quantity of water in Danish butter is much less than in Irish butter ?——No. The Danish farmers knew their business, and worked it into their butter, keeping within the law. What has been the objection to Irish butter is, that the water was not put properly into it.

154. *Chairman.* Was not properly distributed ?——I have seen butter made which contained 14 and 15 per cent., and it looked perfectly dry—Danish butter—while I have seen Irish butter which contained only 12 per cent., and, maybe, a good part of that 12 per cent. was running away on the floor.

155. *David Fagan.* Do creamery people in Ireland buy up Danish butter for sale during the winter ?——Creameries, previous to the war, supplied their customers locally, and they did everything they possibly could to keep the country going.

156. They were the best customers in winter time of Danish butter ?——Often.

157. *Patrick Keogh.* Mr.Lucy, with reference to your statement about the standard of prosperity going up, have you ever heard that the creameries in certain localities were rather detrimental to the standard of prosperity than otherwise ?——I have heard all that, twenty times over, but it is by a lot of people who don't bother to make an accurate inquiry. There is no foundation whatsoever for it in fact.

158. For instance, is the farmer using margarine in his house ?——Oh, yes, for economy sake. He very often had to, during recent years, though naturally when the farmers become anyway prosperous they like a bit of good living as well as anybody else, but in the past they really hadn't much.

159. In the old days, in the farmer's house, wasn't there plenty of milk and butter, and the labourer would get more milk than now, perhaps ?——He got more skim-milk. The labourer is prejudiced now. He imagines it would not be wise for him to really taste what he gets—that is, separated milk.

160. In your Society is abortion responsible for a good deal of damage ?——To some extent, yes, but not very prevalent.

161. *Mrs. Wyse Power.* Could you throw any suggestion on the extra

consumption of butter in Ireland from your districts in this year. Is it because of the shortage of Danish butter alone, or is it that the consumption of butter has gone up ?——There are two reasons. In the first place, there is greater prosperity. There is another consideration as well. There has been a scarcity of other foods which butter is used to supplement.

162. *James C. Dowdall.* Only one point before you go. Were it not for the importation of Danish butter and Colonial butter during the winter months there would not be practically any butter available during the winter months in pre-war days ?——Certainly not.

163. *Edward Lysaght.* What is the price of separated milk in your district ?——We have paid 3d. for it. When there is any over, and the poor people want it in the town, we usually sell it for 2d. In the winter time, when milk is scarce, we also sell them new milk.

164. *John Sweeney.* Mr. Lucy, you are head of a creamery establishment, and you believe in the system thoroughly ?——Not necessarily. I do, but not because I am in it.

165. You see a lot of advantages in it to the people ?——Yes.

166. Do you see any disadvantages ?——Well, I have seen no disadvantages, so far as I know. I am conversant with both systems.

167. Supposing that system is carried on for another fifty years, will you have a farmer's daughter in the country able to make butter for you ?——Certainly. Remember, she can always get an education on that point at dairying schools in the country.

168. Doesn't your system dispense with that ?——No. That question is an obsolete one. It comes to this. Why should a farmer's daughter devote her time to labour which would be uneconomical for her father in the first instance, and for the country in the second instance.

169. Don't you consider that it would be deplorable that butter-making in the country should be destroyed by your system ?——I deny such a thing, because our system is not tending so.

170. *James C. Dowdall.* There are many parts of the country where, by reason of the mixed farming, dairying is not carried on in sufficiently large scale to make a creamery pay ?——Certainly.

171. In these districts butter is made on the farm ?——Yes.

172. What area of the country—this is only an estimate, of course—is, in your opinion, not suitable for creameries ?——That is a big question.

173. It is only an estimate ?——It would be such parts of the country

where there would not be a sufficient quantity of milk to have butter manufactured in a creamery economically.

174. *Colonel Moore.* How many cows would be necessary for a small creamery ?——You would want five or six hundred cows.

175. *Chairman.* Thanks, very much, Mr. Lucy.——Don't mention it. I was only too happy.

EVIDENCE OF LIONEL SMITH-GORDON.

176. *Chairman.* You are attached to the *Irish Agricultural Organisation Society,* and I understand you are an expert on milk production and agricultural organisation ?——Well, Mr. Chairman, I was going to say that I don't claim to be an expert on anything, but my knowledge, such as it is, is more with distribution of milk than its production. However, I don't think we will quarrel over the title.

177. Perhaps if you told us in your own words it would be better before we ask questions.——There are really two main things which I want to deal with. What is put down in the marginal abstract is concerned with the supply of milk to Dublin, and corresponding cities. I also want to make some suggestions, if I may, about the Dairying Industry in Ireland, as a whole. I want to say clearly, before I start, in order to avoid any questions being asked, which I cannot attempt to answer, that I have no knowledge of technical agriculture whatever, and don't claim to have any. It is believed by some people, if one has no technical knowledge of agriculture, one should not talk about agricultural things. I have always believed, and still believe it more strongly after experience of it, that agriculture requires some people to specialise on its business side, as apart from its technical productive side, as much as any other industry does. That is what most of the people of the *Agricultural Organisation Society* say they have tried to do, and what I have tried to do. If I make any observations which lead to technical agricultural questions I ask that you will keep them for somebody else, and examine me purely on the business side of the thing.

I want to make observations, which, perhaps, will be thought rather presumptuous on this question of the Dublin milk supply. The problem of supplying Dublin with milk at the present moment in sufficient quantity, and at fairly reasonable prices—not low prices, but fairly reasonable prices—and of good quality, is a problem which presents, practically speaking, no difficulty, except one. That difficulty is the provision of one or two, or three men, or women, with sufficient brains, energy and enthusiasm to put

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it through. The facts are known. All the difficulties have been considered a thousand times, and there is no difficulty in getting over them, if someone will take the thing up and organise it. The methods of organisation are, by this time, all perfectly well known.

I have been preaching, writing, and crying out about this for five or six years. A great number of public meetings have been held, and a great number of pamphlets have been published, but we are still waiting for somebody to take the thing up and do it. I don't want to take up your time very much with the details of these things, because I have already submitted to the *Commission* an article which appears in *Better Business*—a quarterly journal of Agricultural and Industrial Co-operation—and in which I have put down everything I have got to say on the subject.

I don't think I need go over the ground again. I would just say this. I don't think there is a great scarcity of milk in Ireland at the present moment, as far as supplying Dublin, or corresponding cities, is concerned. I believe it would be perfectly possible, under right conditions, to get the amount of milk required for feeding Dublin. I believe there are two chief reasons standing in the way of getting milk at the present moment. One of them is the lack of supply of cans, and a proper handling of those cans. The other is the uncertainty of the producer and creamery as to whether or not they will receive proper, and continuously proper, treatment, from the people they are dealing with in Dublin. Most of the *Commission* probably know that whatever standard of honesty there might be in any given district of any given railway line in Ireland, there is one thing which is upsetting all standards, and that is the milk can. You may meet a man who would not dream of stealing any property, but he will certainly take your milk churn. I have often heard that on the Wicklow line—and a great deal of milk comes from Wicklow—a milk churn is common property. The man who can get it keeps it, and thinks himself lucky. That is the consequence of the way in which railway companies treat these churns. They appear to think that a milk churn, whether full or not, should take second or third place to anything else that happens to be going up or down the line. The churns are hurled about; the lids come off; and every obstacle that could possibly be put in the way of that milk getting safely to the city is put in its way. That will never be got over, in my opinion, until the distributing agent in the city has a plentiful supply of churns with his name indelibly imprinted on them, and has a lock to the churns, so that they cannot be tampered with. The producer should not be bothered in any way as to these churns. The person who distributes

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should own such and such a churn, and be responsible for it. He is responsible that it comes to him, and that it gets back to the producer.

I believe that could be done, if a sufficiently large organisation is established in Dublin for the distribution of the milk. We will say either a Municipal Milk Supply, or voluntary body, or co-operative body of consumers, on lines on which it is done in most foreign cities. A body of that kind would have to have a sufficient supply of milk churns, and have these churns sealed. Having done that, it would be perfectly possible for that body to put a man on the job at the railway stations, and make the railway companies respect its property in the way of churns, in just the same way as any person having a large business with a railway company would make them respect the property they were carrying. Personally, I have never known it, but I have always thought that it should be possible to insure safe transit of your milk and churns. The Insurance Company then would find it worth while to put a man on the job at railway stations. I believe a man acting for a large Insurance Company would be able to convince a railway company of their duty in a way in which an ordinary private individual would not. Although it may seem a small thing, it appears to be a first essential—the provision and proper safeguarding of churns for milk.

The second question is the guarantee to the producer. If milk is to come to Dublin from outside, in large quantities, it has got to come some considerable distance. As you know, there are no dairying districts within a very short distance of Dublin. The creameries, which will have the handling of it, will have to send it up in proper condition for consumption in Dublin. In order to do that, those creameries that contemplate regular supplies, have got to make certain alterations in their machinery, and method of working, with more or less expense and inconvenience. You will easily understand, no creamery is going to do that unless they have some sort of a guarantee that the people they are dealing with at the other end are going to stand by them, and make a regular business out of it.

There has been a great deal too much in the past of people buying a certain quantity of milk from some creamery, or somebody in the country, for two or three months, and then sending down and saying the milk went sour, or arrived bad, or something of that kind, gradually arousing a series of controversial questions with the person supplying them. They say, I won't go on with this business any more.

In addition to that, there can be no doubt that the testing of milk undertaken by the authorities has evidently been very selective testing. The milk

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has been tested from some more continuously and regularly than from others. The fact that it is suspected has also discouraged people from sending milk to Dublin. All these factors have operated in such a way that there is a disinclination, even though it may be a profitable thing to do, on the part of creameries who have milk to spare, to send it to Dublin for the purpose of relieving the shortage there. That disinclination can only be got over by the creation of some body in Dublin, which will command absolute confidence. If to-morrow we could see the establishment of a body in Dublin, which had sufficient authority and prestige, and sufficient capital behind it to convince people throughout the country that it was a staple thing, really intending to supply Dublin with good milk, I feel certain that body would be able—supposing it produced cans—to get all the supplies of milk which it would require for the feeding of the population of Dublin. For that reason I have never been able to bring myself to feel any enthusiasm for any partial attack on the problem of Dublin milk. All sorts of things have been done to alleviate the problem, which only meet it in a small way. I don't believe you will get the problem solved until you start to cope with the thing in the way I suggest. I don't know that it is worth while for me to describe to you the fact that there is a shortage of milk in Dublin. I think that is taken for granted.

178. *Chairman.* We are more concerned with what will improve the supply of milk.

179. *Witness.* At the same time, I don't think it is necessary for me to give any of the details of the horrible quality of milk supplied in Dublin. We have a magic-lantern knowledge of the bacilli and bacteria. We know there are many millions of them to a cubic centimetre. We may take the quality of the greater part of the milk supply to Dublin as absolutely insanitary. I have put down the reasons for it in this article—I won't trouble you with them again. There is one thing which I should like to call your attention to: that is the extraordinary proceeding, which it really is, to milk a number of cows, whose milk is going to be fed to children in a raw state, invariably into an open pail or bucket in a cow-barn. Everybody does it. Of course, I shall be considered an extraordinary crank for objecting to it. As a matter of fact, as long as you milk a cow into an open pail—that cow is sending her tail around the whole time—the bucket is absolutely bound to be full of germs. That milk is sold as food for children in Dublin, without being Pasteurized, without being cooled. It may be cooled in a half-hearted way. It is not really cooled, and it is not Pasteurized.

It is perfectly easy to construct a bucket. There is a bucket, for

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instance, in one or two countries, which merely admits the milk. It is easy to imagine how you could construct a bucket of that shape. I would suggest, for the consideration of this *Commission*, that that should be one of the smaller requirements which might be taken up, if you are going to improve the milk supply—the procuring of a bucket into which no more than the minimum amount of germs and miscellaneous dirt will be conveyed at the time of milking. Secondly, this milk coming to Dublin must be Pasteurized. A controversy has been raging for many years as to whether or not it is right to Pasteurize milk. Without being an expert, I have no doubt as to the answer. The answer is, you can treat milk very much better than by Pasteurizing it. If you can keep milk absolutely clean you should not Pasteurize it. You should feed it to infants without any Pasteurizing. The second best thing is to Pasteurize it.

Then comes the question of price. All these things, to a certain extent, will increase the price of milk. I have taken my model on these investigations from the city of Toronto, where I lived for a considerable time. In Toronto, the death rate from diseases, such as typhoid and diphtheria, was about 46, and within three years it was reduced to 2. That was practically all done by control of the milk supply by the Public Health Authorities. You can take the list of precautions which are taken from this, or I will run very quickly through them.

180. *James C. Dowdall.* I think it would be well that you should give us these regulations.

181——I will give you the whole regulations of the *Department of Health* of the City of Toronto. They are :—

1. Inspection of every farm at least twice a year, and far more frequently if needed. The results are indexed on cards and filed. It is sought to persuade the farmer to clean his cows and stables, to provide bedding, ventilation, and light, to keep good and clean utensils, and collect and chill his milk before shipment, in a clean room set apart for the purpose. When farmers refuse to carry out their duties, and the supply cannot be got in clean condition, it is at once excluded from the city.

You understand, every farmer has his card. The card is indexed, and offences are recorded, so that you can see at any moment. If the farmer offended three or four times in any way, his milk can be shut out from the city.

2. Receiving stations are provided near sources of supply for the

collection, chilling and inspection of milk, before putting it on rail.

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3. All milk is shipped in sealed cans, stamped with the producer's initials.
4. Milk must not reach the city at a temperature higher than 50 degrees F.
5. It must not contain crude dirt. Samples are filtered through absorbent cotton discs, and any showing dirt is poured out, or dyed red and returned. Duplicate discs are sent to the producer and filed, and an entry made on the producer's card.
6. Samples are tested for butter fat (3 per cent.), total solids (12 per cent.), and bacterial count (250,000 in winter and 500,000 in summer).
7. A record is kept of offences, and a notification is sent to the shipper after each offence. Failing improvement, the supply is excluded from the city.
8. Milk is sampled (a) at the city or station boundary, if driven in; (b) at the retail dairies; (c) on delivery, to ensure against adulteration by retailer.
9. All milk is retailed in sealed bottles, which are sterilised. Cans are sterilised, and sealed before returning to farm. A strict check is kept on bottles and cans by the Department, which attaches the greatest importance to this matter.
10. All milk is Pasteurized by the retail dairy. Pasteurization is defined by law; the milk must be held at 140 degrees to 150 degrees F. for 20 to 30 minutes. Pasteurizers are regularly checked by sampling, and unless the total bacteria in the raw milk are reduced by at least 95 per cent. the plant is condemned.
11. Retailers of milk are licensed, and each has a card, on which is entered, every three months, the mark allotted to it for methods of handling and quality of supply. The best of those scoring eighty per cent., or over, are published from time to time. (The number achieving this rose in a year from ten to forty-eight).
12. The dairyman's name is notified in all cases of conspicuous disease, and special investigation made and precautions taken.

These are the regulations in the city of Toronto. It is perfectly clear,

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if such regulations are put into effect the cost of milk must be considerably increased. In my opinion, you have got to face that increase in the cost of milk. If it is necessary, and if it brings the cost of milk to a rate at which the poorer people cannot afford to buy it, much as I dislike it—and I always dislike it intensely—you cannot get away from the fact that you have to provide a subsidy out of the rates, or out of the taxes. You have got to take a choice between that or deliberately starving or poisoning the children. It is a brutal fact. You have got to face which of the alternatives you prefer.

I have had a considerable number of interviews with the medical officer of Toronto, and of a great many other cities. In Toronto, which is a very good example, I think, he told me from ten to twenty per cent. of abdominal tuberculosis, and tubercular glands, was due to lack of provision in regard to milk. In regard to other epidemics—typhoid, scarlet fever, septic throat, and various diseases were put down to the same cause.

I have personal experience of the fact that these things were practically stamped out in that city, by supervision of two things—the water and milk supplies. I have also personal experience of what is happening here. I owe my supposed resemblance to Mr. Figgis to the fact that these things have not been stamped out in Dublin. I spent seven weeks in bed, which I believe was probably due to the milk I drank. Other people who got the same milk got the same disease. All that could be done away with by taking all these precautions.

It is a question which I leave to the *Commission*, whether or not it is not worth while making the rates pay—the rates or taxes required to bring about a reform of that kind. I don't think it will ever be done in any other way.

Then the question arises as to the form of organisation that is going to undertake things of this kind.There again I have no doubt, that under certain conditions work of this kind should certainly be undertaken by the Municipality. It strikes me that it is just as much a municipal function as the supply of water. It is a necessity of life for which the Municipality ought to make itself responsible, in my opinion. But you have the premise to that. How are you going to get a Municipality in which you have absolute and complete confidence ? You have to get a public opinion which will justify the municipal authorities in taking steps which may be unpleasant to certain parts of the community. If you don't do that, you will not get any member of the municipal body—or at least you will only get a very exceptional member—to incur the unpopularity which may be caused in putting some of these

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reforms into operation. One depending on popular favour—on certain interests—unless he knows he has got sufficient public opinion behind him, won't take these steps. Therefore, I have said (in *Better Business*) that I recommend Municipal Control of milk distribution (it being assumed that public opinion will secure honesty, impartiality and reasonable efficiency of administration) on the following grounds :—

1. The officials of the Public Health Service will be constantly at the disposal of the Milk Committee, and will thereby ensure the carrying out of proper regulations.
2. Centralisation, special treatment, and manufacture of by-products from sour or surplus milk (one of the greatest factors in cost) can be carried out with the minimum of expenditure.
3. Overlapping and duplication of investment and labour are eliminated.
4. Pasteurizing and preparation of certified milk are ensured; also proper treatment of utensils.
5. Infectious diseases can be easily traced.
6. Excessive, or even normal profits, can be curtailed and prices stabilised.
7. The producer knows with whom he is dealing, and is assured continuity.
8. Railway companies and similar bodies can be properly dealt with
9. Facilities for supplying milk of special quality and price to nursing mothers, sick persons, and the children of the poor, are under the control of the distributing authorities.
10. Supply and demand can be readily estimated and equalised.

I don't think any of these advantages outweigh the dangers of handing such a thing to the Municipal Authority, unless you are absolutely certain that the conditions I speak of exist. It is not for me to offer an opinion as to whether they do or do not exist in any given place. I would point out that practically the same things can be achieved by voluntary organisation. They have been achieved in Copenhagen, and various other places. There is nothing to prevent an association of consumers from being established in the form of a Joint-Stock Company, or Co-operative Society, with a limited dividend in Dublin, the day after to-morrow, which would take charge of all these things and secure practically all these advantages. I think myself—in fact, I am quite convinced—it must be an organisation of consumers, which undertakes this work in Dublin, for the reason that the producers, or most of them,

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are a great distance from Dublin. They can hardly be expected to undertake the work.

In Belfast there is an organisation. There are creameries there, and they have formed an organisation of producers—of creameries and federated men. They open shops and are supplying the city. To a considerable extent they are an organisation of producers, and the thing works perfectly satisfactorily. I think myself, as far as Dublin is concerned, an organisation of consumers is needed. I see no reason why that organisation should not be undertaken immediately. As I say, I don't think there is the least difficulty, except the getting of one or two public spirited men, with sufficient brains and sufficient leisure, from other occupations, to put it through.

There is just the quantity of milk available. You have heard so much evidence on that already, that unless anybody wishes to ask me questions on it, I don't think it is necessary for me to go into it. We assume the yield of milk in Ireland can be increased by, at least, 50 per cent. It is roughly 400 to 420 gallons per cow, and it can be easily increased to 600 gallons, and even, perhaps, 700. We know that must be done by selective breeding and by Cow-Testing. Then again, in this article which I wrote, I felt myself forced into a recommendation which is disagreeable to me—the recommendation of a subsidy.

As to the diminution in the yield of Irish milk, Mr. Lucy gave evidence this morning. He knows a great deal more from the technical and practical point of view about milk than I do. Of course, he knows his own district better than I do, but I don't think he is accurate as regards the whole country in saying this decline in milk yields has only begun since the war. I know it is perfectly accurate, as far as Mr. Lucy's own district is concerned, but I think it will be found, if you examine carefully the records of milk production throughout Ireland, that there has been a small, but perfectly steady, decline going on for the last seven, eight, or nine years. I think it is fairly easy to show reasons for that. Most of them you have had discussed before you already. I think it would be a mistake to believe that the decline is purely the product of war conditions. I don't think it. I think there was a general tendency—small, but increasing—to go out of dairying business altogether. I did collect certain figures, which show that the proportion of dairy cows to the proportion of other cattle in Ireland, for a considerably long time, is not keeping pace with the same movement in other countries.

182. *Thomas Johnson.* The point, as I understand it, was that the yield per cow had declined?——Oh, no.

183. *James C. Dowdall.* It is rather increasing.

184. *Thomas Johnson.* And in support of that, evidence was given as to the shortage of feeding, and so on—the difficulty of labour and all that.——That is quite true—the fact that the shortage of food and the difficulty of labour have diminished *the total yield,* but *the yield per cow* is slightly increasing. People are diminishing their cows owing to the difficulties.

185. We have evidence that the number of milch cows is not declining—official records, the Department's records, if you accept them.——I accept them with reservations. I don't think, in any case, I am really offering evidence on that particular point. I want to get off that point on to the question of the future of the dairying industry in Ireland. Here again I have no claim to be a technical expert. The point I want to make is this. I think everybody who is discussing dairying in Ireland at the present moment—certainly I think a good deal of the evidence you will get is extraordinarily optimistic. Speaking from a purely business point of view, without any technical knowledge, I have believed for several years—two or three years—and I believe it more strongly than ever at the present moment, the whole dairying industry in Ireland is in an exceedingly precarious position at the present moment. I think people who are making plans for improvements in butter-making during the next two or three years are looking at things in a very optimistic way. I think we ought to consider what we can do to save the dairying industry at all. I say that because, as Mr. Lucy said this morning, the world is exporting butter. That process has been held up during the war. The English markets have never been accessible to certain butter from certain countries. I have been very closely in touch, for instance with the organisation of Russian Co-operators, who have been carrying on this business on a very large scale in London throughout the war. I know roughly what their plans are at the present moment. It is absolutely clear that as soon as things settle down to some extent in Russia, there will be about 5,000 federated creameries in Siberia, which are going to place the whole output of their butter—and it will be a good deal—on the English market as soon as any shipping is available.

186. They will have a Control brand ?——Yes. I don't say that that butter is going to be anything better than Irish butter. As a matter of fact, it will not. But I say unless we wake up, that butter is going to be a great deal better handled than Irish butter. These people have thought it worth their while to get themselves federated and organised, and to have not one, but two or three agents permanently living in London for the last five years.

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These people have nothing to do but to live there in London and make themselves familiar with the whole conditions of the trade—to get in and make friends throughout the whole marketing agencies there. Exactly the same thing is being done by New Zealanders, Australians, and even by Americans, and a certain amount of Canadians. We have got to go into the market with our supply, which only runs for six months of the year, and compete against those highly organised people.

I don't doubt that we can make just as good butter as anybody in the industry—I have seen many tests. I don't doubt that we have a great advantage in our proximity to the English market. I think we are relying a great deal on that fact, but I don't think, in the near future, it is going to carry much weight. The advantages of quick transport and cold storage have practically nullified that advantage. What the English consumer wants is uniform butter all the year round. Every other country is taking steps to supply that. Denmark, Holland, New Zealand, Russia—all these places—are arranging things so that not a pound of butter will be exported from their country which won't bear certain standard tests. You may be certain that every pound of butter coming from one of these places is going to be up to a certain standard, and that no other standard passes it.

What is our system? Our creamery managers, or a great number of them, make exceedingly good butter. Nobody would deny that there are certain Irish creamery managers who make bad butter by turns. It may be an accident. I took the precaution to take a pound of butter, which I bought in Dublin, and of which I knew the source, to be analysed. There was 30 per cent. of water in it. That butter under ordinary conditions was exceedingly well made—exceedingly well worked. As Mr. Lucy said, you have only 12 per cent. in some butter, and it runs all over the floor, while there may be 30 per cent. in other butter and it looks all right. I happened to know that there was that amount of water in butter, and I took the precaution to have it analysed. That butter may, just the same, have gone over to England. At the present moment there is a remedy. The food regulations look after that kind of thing, but I suppose these are going to be removed. When they are removed we go back to the system which we had before they were introduced. Every man competes with every other man, sending butter over to England and getting as much as he can for it, some working in as much salt and water as possible, and others doing it honestly, and consequently getting a worse return. I don't believe that that system is going to stand up against the competition of organised countries.

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What I want to point out is this. The first essential for selling butter in the future is, that it is going to be really good butter. We have got to recognise that people have got the habit of eating margarine, and some people have got to like it. Are these people going to pay four times as much for butter as for margarine, unless the butter is really good. We have got to face that situation or go down.

Butter, cheese, and other milk products are being mainly handled by about 700 creameries, of which about 460 are co-operative, and the balance proprietary creameries. Practically speaking these 700 creameries are acting as isolated units.

One point I want to drive home, as an essential part of my evidence, is, that something has got to be done in the very near future to produce an organisation of these creameries, or at any rate one or two organisations of them, which will give them a capacity to grade and establish a standard for their butter which will compete with other brands, and, at the same time, will give them a flexibility of combined capital, as such a firm as, for instance, Cleeve's has.

One of the things which has been threatening milk production lately has been the competition of condensed milk. There is no standard fixed for condensed milk, and practically there is no fixed price. Consequently it is a profitable industry. A firm like Cleeve's can turn from butter to cheese, and from either of these to condensed milk, or from one of these to Dried Milk. They do that. They are in the position that if any of these ceases to pay, they can change the greater part of the milk which they take, into one or the other methods of treatment, and are always sure of being paid pretty well. What I want to urge is that the whole dairying industry of the Irish nation has to be organised on the same basis. If we are going to compete with other countries I think we have got to sink all ideas of local competition between one creamery here and one creamery there, or a little group of creameries here and another there. If we go on with the present system all those groups will be stamped out by competition coming from other places where they have learned to stand together.

I submit to the *Commission* that the Irish dairying industry has got to be treated as a whole, and organised in such a way as we can hold, grade, standardise and market our butter as Irish butter. We can keep our little sub-divisions as much as we like inside the country, but butter or cheese, or any other product, which leaves the shores of this country ought to leave with a guarantee that they are Irish, whatever its controlling authority may

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be—that this product is a good, standardised, fairly made and honest product.

At the same time when we are doing that we ought to have some method of organised flexibility, which will allow us to make quantities of that product proportionate to the demands of the market. If we are sending out one month a certain bulk of butter, and the next, a certain bulk of cheese, I believe we have every reason to be pessimistic about the dairying industry in Ireland.

One gentleman tried very hard this morning to get some admissions as to the quality of Irish cheese. I am not an expert on cheese, but I eat it. I have seen a great deal of it, and I have received a large number of reports, and I know that certain creameries and certain people here in Ireland are putting on the English market cheese of which there is no better kind. I know that that excellent work of these creameries is being ruined by flooding the market with a whole lot of stuff which, honestly, is not fit for human consumption at all. With great respect, I think we have a great deal of moral cowardice about these things. We are afraid to say the truth because somebody will write to the papers to say we are unpatriotic, and giving the country a bad name. We have got to drop that attitude, and look at it in this way, that a lot of cheese was bad, that the creameries and the people who are capable of making good cheese should proceed immediately to take steps against those people who make bad cheese and ruin their reputation, and stop them doing it. Until we face the fact that there is a lot of bad cheese, and a lot of bad butter for that matter, being made, we shall not be able to root it out.

At the present moment, New Zealand is in this position. All their butter, all their cheese, and all their meat, has been bought by the Imperial Government up to June, 1920. That butter has been bought and paid for by the Imperial Government at 1s. 7d. a pound. Cheese has been bought and paid for at 10d. a pound, and meat has been bought and paid for at 5d. a pound. We get for butter from the British Government about 2/7 a pound; we get for cheese about 2/- a pound. New Zealand is producing cheese just as good, taken on the average, while the farmers there, as two of their leading dairying experts, to whom I was talking the other day, admitted to me, get along all right. They don't like that fact, but still, as soon as that control is taken off they will have a margin of 1/- to compete against us with. Roughly, the same sort of thing is happening in the case of other countries.

It seems to me, if we are going on using the dairying industry as the mainstay of our agriculture, as I think we must do, we have got to overhaul it closely I think the first step is an organisation such as I said, doing away

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with the present haphazard system of competition in marketing. I think the second step is a very detailed inquiry into the possibilities of manufacturing Dried Milk, and other by-products of that kind, I am not going to go into that in detail, because Mr. Fant will be able to give you technical detail. I think this thing has to be taken on by the Irish people right away.

I think there is one thing we have got to look into. I have always been brought up in the belief that some day or other we were going to have a great outburst of winter dairying. I have always lived hopefully looking forward to that, and I have frequently written articles about it. I am now told I have got to disbelieve all that. It is beginning to be felt that winter dairying will not be a possibility in the near future in Ireland. If that is so, I feel it is absolutely essential that we should discover something to take the place of winter dairying. You have a possibility which you are going to investigate at a later stage, I believe, in this inquiry. You can combine with the creamery the preliminary stages of the production of industrial alcohol. I believe you can create, in conjunction with the creamery, a plant, which with much the same labour, and practically the same power, working only in winter, can be used for winter alcohol production, or the production of beet sugar. It has been successfully done in other countries. Something of that kind appears to me to be essential. I think the whole future of Irish agriculture depends largely, if we are to meet Mr. Johnson's point of view, for instance, on industrialisation of agriculture, on keeping in our hands the manufacturing and marketing process of everything we produce. If we are going to do that we must start by putting the dairying industry on a sound basis, by better organisation than we have given it in the past. I am afraid I have been very discursive, but I will try and answer questions.

187. *James C. Dowdall.* Mr. Smith-Gordan, you refer to the evil of competing creameries, and your information is that a good deal of the cheese in Ireland has been bad ?——That is so. I would like to qualify that. I won't say a good deal of the cheese has been bad, but a good deal has been unsatisfactory. That is to say, it is tasteless.

188. I agree at once. But I put this to you. Some of the co-operative creameries are very close to each other. In case one creamery manager, in an area, used, we will say, 20 per cent. more separated milk in his cheese than another, he would naturally show a better monetary return than his neighbour. I suggest to you, when a farmer tells he is getting a better return than another, there is a sort of compulsion against the man who is putting honest quality in the cheese ?——Yes.

189. Can you suggest a remedy ?——The only remedy I can suggest is, that such grading of cheese should be done that the man who puts the greater amount of skim-milk into the cheese will not get the greater financial reward.

190. *Chairman.* Standardisation of the quality ?——Yes.

191. *James C. Dowdall.* If we are to retain any portion of the cheese market, that is imperative ?——I believe so, and I believe the same is true of the butter.

192. Are you aware that previous to the war there was a decline in the quantity of Irish butter exported ?——That is my understanding.

193. I take it, that is a natural corollary to the lesser production of milk ?——Yes.

194. Previous to the war the greatest import of butter into Great Britain was from Denmark ?——Yes.

195. The second from Siberia ?——Yes.

196. It is well that should be known, in view of what you have said of the organisation going on by Siberian agents in London——I fancy the quantity of Siberian butter will be very greatly increased.

197. Are you aware that previous to the war the Siberians got Danish experts over to organise their dairying ?——I know they had.

198. With regard to what has been said here this morning on winter dairying; you don't think concentration, organisation, or advocacy is going to bring it about ?——I don't, really. I have seen a great deal of experiments tried—local prizes, and various other inducements offered to people. The results have been very disappointing.

199. Are you aware that the Department of Agriculture has taken over farms and made exhaustive experiments to prove that winter dairying was more remunerative than summer dairying ?——I am.

200. Have they proved it ?—They have not decided the people.

201. Are you aware, of your own knowledge, that cans are stolen indiscriminately ?——I think it is the experience. I had a good deal to do with forwarding fairly large quantities of milk from creameries in the country to Father Finlay's *Dublin Food Supply Society*. In my capacity, as an official of the I.A.O.S., I used to act as a buffer between the two parties. I know the cans weren't there. The creameries accused the *Food Society* of having detained them, and the *Food Supply Society* accused the creameries of not sending them. In no case was either of these parties responsible.

202. I will answer my own question. I have both bought and sold milk,

and I have found that cans have been stolen indiscriminately.——I have no doubt of it.

203. Regarding the testing of milk, you think samples have been taken very frequently in some cases, and in the other cases samples have not been taken ?——That is my impression.

204. You have mentioned all the precautions taken by the Municipality of Toronto. I think they are almost out of the question for us at present at all events. Do you think people could be induced to realise, as a commencement, that immediately milk is taken from a cow it should be strained through muslin and get all the impurities out of it before they become dissolved.——If you can get milk from a creamery you can easily ensure the equivalent of that being done.

205. *James C. Dowdall.* Straining milk before it comes to the creamery ! Do you think it would be possible if creamery managers put that condition up that most of them would co-operate ?——It is a very simple precaution.

206. *Chairman.* In previous years wasn't that always done ? In any kind of a decent farmer's house wasn't the milk always strained ?——Oh yes, but as a matter of fact, milk which comes into the creameries, in many cases, contains very large quantities of alien matters—sometimes sticks.

207. *Chairman.* Then is it not sent to the creamery in as good condition as it would be received in a farmer's dairy.——Probably not. It is only fair to the creamery managers to say, they are not the people to blame. One thing is that in many cases the creamery manager would like very much to return some of the milk sent to him. Unless he can be quite sure that his committee will stand behind him, the thing is very difficult. It may be that the milk in which the stick is floating belongs to a member of the committee.

208. *James C. Dowdall.* Yes, the manager is awkwardly situated. He cannot stand on the Chairman's toes, for instance.——Yes, that is quite true.

209. Previous to the war, I think, there was a great increase in the amount of milk exported to England—just before the war ?——I don't know.

210. Have you any reason to think there was any increase in the quantity of cream exported ?——I could not tell you that.

211. I think there was an increase in the amount of milk condensed ?—— Oh, there was undoubtedly.

212. That would, of course, to some extent—only to a partial extent—account for the decline in the quantity of butter exported ?——Yes.

213. And probably a better standard of living began at that time in Ireland ?——That would account to a considerable extent for it, I fancy.

214. You referred to the necessity of more varied manufacture—more alternative systems. You instanced Cleeve's in that connection. I tried to make a point with Mr. Lucy that it would be well, at certain times, instead of churning all the milk into butter, that part of it might be made into cheese. I think that is already begun.——It is, to a large extent.

215. So that it might be carried on more successfully and get a good name, it is all the more imperative that the cheese made should be very good ?——Certainly.

216. In your opinion, some of the best cheese made in Ireland is as good, or better than cheese made anywhere else ?——Yes, I think Cheddar cheese made in this country is as good as the Cheddar cheese I have tasted anywhere.

217. *Thomas Johnson.* As regards organisation and distributing in cities, I don't quite understand why there is any insuperable difficulty about organisation in this city by creamery societies, and why it is successful in Belfast. Do you know anything about the figures in Belfast—the quantity and method of distribution ?——The method of distribution is over the counter in small depots. I cannot give you figures. The thing has only been going on for a year. It would be more difficult in Dublin. The creameries dealing with Belfast are within easy driving distance of the city, whereas there is no creamery within 60 or 80 miles of Dublin.

218. Then it isn't really the method ?——Some of it is coming by rail a short distance.

219. Ballyrashane, I think, was party to this, for instance. That milk would have to come by rail ?——Yes.

220. It might just as well come from Limerick ?——Theoretically that is so, but it is largely a psychological matter. These creameries are more in touch with Belfast than a Limerick creamery is with Dublin.

221. Limerick creameries have their organisation—the I.A.O.S. If it is practicable at all, and desirable, it should be the organisation.——It should. I believe there is some scheme of that kind on foot.

222. Do you know anything about the relative costs of distribution of milk in cities—in Dublin, as compared with other cities, for instance. I would like to know what the saving in the actual cost of distribution may be with milk when sold through a shop, as compared with milk sold by carts in the streets, if there is any saving ?——I would put it down roughly at 4d. a gallon. I know it pays people to sell milk 4d. a gallon cheaper over the counter.

223. I suppose labour in the *Dublin Food Supply Society* is partly voluntary.——It was certainly, I think, in the earlier stages.

224. You could not use that as a comparison ?——You cannot in the case of milk because there has been a special fund throughout for milk.

225. I think Mr. Anderson spoke of 7d. in the case of the *Plymouth Co-operative Society*. Do you know anything about the cost in other towns ?——I don't know the exact cost of distribution. I think in the case of the *Lucan Dairy Company* it costs actually 6d. to deliver the milk.

226. Taken from the railway ?——Yes, and driving it around. The corresponding figure in Plymouth for distribution is about 3d. to 5½d.

227. *Chairman.* That would be accounted for to a large extent by the greater quantity ?——Dublin is peculiar in regard to the distribution of people. In most cities you get a whole quarter in which people of about the same income live. Here you may have to go from one end of the city to the other and carry the milk around for miles.

228. *Thomas Johnson.* Would you suggest that distribution of milk from depots at the corners of streets, or blocks of houses, could not be done at a very small cost per gallon, if people would call for the milk ?——I think it could be done in some cases—even if they didn't call. In Plymouth the method is to put it on a handcart, and these handcarts deliver the milk. They use them also for selling vegetables and things of that kind.

229. You seem rather to suggest that, the impurities in the milk being the cause of disease, the purification of that milk would cost a considerable sum per gallon. Has it ever occurred to you that the use of a larger quantity of milk would so strengthen the human body that it would overcome the risks of any germs that may be there ? It seems to me that I would rather have a plentiful supply and take the risk of impurities, than to have strictly pure milk, if I could not get sufficient.——I have never been starved, and yet I could not resist the attacks of scarlet fever. I agree that if you have to choose between them, I would rather have quantity than quality.

230. When you speak of Municipalisation, do you mean that the Municipality will actually organise the purchase and have the distribution under their control, or simply control it ?——That they would actually trade in it as in Mannheim. They simply buy milk and sell it. There are certain great difficulties.

231. Coming to the suggested interchange; where you instanced Cleeve's. I take it, that would require production on a large scale.——It could be done

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so long as the creameries were federated. You don't necessarily need large places to do it.

232. Take Mr. Lucy's creamery for instance. It is prepared for dealing with the milk of 260 farmers. Do you suggest it might be made possible for them to undertake the production of alcohol, or utilisation of beet ?——Yes, with a very small extra outlay, it could be done.

233. In the production of beet, it has been suggested that it would require a large acreage to make it a practical proposition ?——Even so. You would have a large factory in a central position, but I believe you could collect a lot of material from smaller places, where it could receive preliminary treatment.

234. Then as to the question of control and standardisation of farm produce for export, that seems to apply to a central authority. Are you suggesting that that should be a voluntary central authority—a voluntary federation—or that it should be an national organisation with power behind it ?——For the moment I look upon it as a voluntary federation. I would expect that some day it would receive State sanction in the same way as in Demark where it requires a Government brand. As long as you have not got a Government you cannot have a Government brand.

235. You are in favour of State Control in these matters ?—I would not like to have the State dictating the use a man was to make of his produce, but you should have an authority to impose tests on produce going out of the country.

236. It is likely that that would imply the control of export ?——There might be a certain risk of that, but I would rather chance that.

237. Taking this whole business of production of farm produce—milk produce and so on—what is the purpose of it ? What is the ultimate end the farmer has when speaking about producing milk ?——It is to make his living, I take it.

238. It would not matter to a farmer whether he makes his living out of milk, or out of tombstones ?——Not in the least.

239. It is of importance for us to understand that whether the farmer is producing food or not, doesn't concern him—if he is producing good food or bad food it doesn't concern him, provided he is able to sell at a price that pays him. *Chairman.* Isn't that maligning the farmers ?——That depends on the class of farmer.

240. *Thomas Johnson.* We know, as a matter of fact, that a very large number of farmers are quite ready to turn from crops to store cattle, even if it pays a little less. There is not much maligning in that. *Chairman.* There

should not be any bar to any man carrying on his business in a manner he thinks best himself. Although a man does produce food, it is not right for people to criticise him more strongly than they do in other directions of business.——That is the exact point of view of the farmer. That is the grievance a large farmer feels.

241. *Chairman.* He should not be subjected to any more regulations than any other industry.——Because the industry he chooses happens to be concerned with the production of food.

242. *Thomas Johnson.* The point I am trying to come to is, whether we ought to concentrate on the fact that the whole agricultural operations of Ireland ought to be directed to supplying the people of Ireland with food; or whether the farmers should concentrate on supplying butter for England. They are not following the highest patriotic impulse if prices in England can turn their economy to cheese making, irrespective of the desires or needs of the people of Ireland.——Quite apart from the ethics of it I should not agree with the economics. I don't think Ireland can produce the exact things which she requires to feed the people. All that is a matter of national economics. We ought to encourage the farmer to produce things we can export a surplus of, and bring in other things we require. We must sell cattle and butter in order to get flour and tea.

243. *Professor Ryan.* On the question of industrial alcohol, I don't see the connection between alcohol and the creameries?——The creameries apparently, will not work fully through the winter. A preliminary distilling process could be carried on in case the country went in for the production of industrial alcohol. In Germany, as far as I have been able to get to the facts—in the small local parts of it—potatoes are dried and converted into spirit. There seems to be no reason why that should not be done here with the same labour as when the creamery is working fully.

244. The plant would not suit, or the power that would be available.——If you have a creamery building you can extend it to the extent you would require. You can use the two standing walls, for instance, and put on an addition and so on. I would get the power from the existing engine.

245. *Edward Lysaght.* As regards this very essential matter of standardisation, is there a control in existence?——There is the Ministry of of Food. The Pool operation is in existence, and would form the nucleus of an arrangement of that kind.

246. Could not a similar thing be put into operation in the case of cheese?——Yes, we have been working in that direction, but we have been

held up largely by the fact that the English makers of food who were selling with us to the Ministry, refused any form of standardisation.

247. In other words, you are swamped by over-representation of English manufacturers on the Pool ?——Yes, we have asked for standardisation and it was turned down.

248. *David Fagan.* You are aware, of course, that for about six years before the war Siberian butter came into Dublin ?——I don't think I saw any Siberian butter. Quantities of New Zealand and Danish butter came frequently to Dublin, but I have not noticed Siberian.

249. The principal market for Siberian butter before the war was Germany. Of course, Germany is a butter country. They are a butter-eating people. Is not there a great chance when things settled down that the Central Republics will use most of the Siberian butter ?——The Siberian butter will be organised in future for the London market. They may get a certain amount of it in Germany.

250. As to clean milk, in towns there are more precautions taken. As far as I can find out if a typhoid case breaks out in a country farmer's family there is no precaution taken to stop the milk coming to Dublin. In a city the dairy is closed down instantly. I am not aware of that taking place in the country. I am not aware of a creamery being closed.——We had instances of that.

251. *John Murphy.* You suggest it might be a means of securing purer milk if the Municipality took control of it ?——Yes.

252. In Toronto when the Authorities took charge what is your recollection of the position ?——In Toronto it was purely a matter of control, not of trading in milk.

253. They took control ?——They took control simply of testing and so on. The position was very severe for a few months. It was found what happened was that a whole number of small and very inadequate milk-dealers went out of the business. Within the first six months, larger and better equipped men took their position, when they found it was good for them and good for the city. There was practically no opposition after the first year.

254. The opposition was disarmed after a very short period ?——It was.

255. My object in asking that question was, if at any time the Municipal Authorities took action here, I wanted to know the experience elsewhere.——Yes, but I think you are liable to have more serious opposition here because of the system of the local cowkeepers.

256. Personally, I don't think municipal trading would be desirable. I think if the Municipality took control of it in a vigorous way, and insisted on

their officials exercising strict disciplinary methods in the selection of samples of milk, regularly and frequently following it up, I think a great deal could be achieved. Is that your view ?——Yes, I think Municipal control in conjunction with voluntary organisation of trading, is the proper solution.

257. Might I ask whether you prefer the Municipality to take the matter up vigorously, or the alternative—a voluntary combination of people interested in the welfare of the city, and the help of the poorer people. Which would be more effective ?——Personally speaking, in this city at the present time I would prefer a voluntary organisation.

258. You think if a number of men with sufficient public spirit, and prepared to make a sacrifice, combined into an organisation for the purpose of securing cleaner and better milk, it would be very likely to be effective.—— I do. I am quite convinced of that.

259. Mr. Johnson seemed to think the farmers really ought to consider this question more from the standpoint of the health of the general community than from the standpoint of their own profit ?——I am afraid, as business men, we would be expecting too much from the farmers if we asked or suggested to them to depart from getting their profit from their trade, rather than keeping the matter before them of doing what is good for the general welfare of the community. I am sure if there was an organisation in which the farmers had confidence, and that organisation put the matter in a reasonable way before them, I have no doubt whatever that you would get an excellent response in a large number of cases.

260. *Thomas Johnson.* I would like to ask if in the Farmers' Co-operative Societies there is provision made for the co-operation of the labourers with the farmers ? Was there any movement in that direction ?——Of course there is nothing in the rules of any Society to prevent a labourer from becoming a shareholder. Any labourer as well as any other person may receive all the advantages of membership provided he pays for his share. There is a rule in 99 out of every 100 Societies providing for a bonus on wages to be paid to the labourer in proportion to the dividend paid to the shareholders. Apart from that there is no further provision. Shares only carry one vote. A committee may refuse to accept a member. If you are dealing with a creamery which was purely a creamery there would be no inducement to a labourer to join in. Wherever there is a Society doing a distributive business—selling goods to the members—there the labourers, as far as we can see, are working in this matter.

261.—*Chairman.* They are taking an interest in the movement ?——Yes.

In all new Societies we are organising now there is a large percentage of labourers.

262. *Edward Lysaght.* Particularly in stores?——Yes. There are some Societies where there is a reluctance to admit them, but it is not a general tendency. The tendency is to bring the labourers in at the start of the Society side by side with the farmers.

263. *George Nesbitt.* Do I understand that the non-success of winter dairying is due, not to the fact that it could not be made a financial success but to a disinclination of the farmer to adopt special agricultural needs.—— I think that is in turn due to the belief that it could not be made a financial success. If you can convince the farmers that they would be able to make money out of it, no doubt they would take it up.

264. *Chairman.* Thanks very much. You had a good deal of patience with us.

EVIDENCE OF DR. HAYES, T.D., *Medical Officer, South Dublin Union.*

265. Mr. Chairman, it is with some diffidence I come here to give you whatever [illegible] of a c[illegible] hold on the subject of Dried Milk. Of its commercial or business [illegible] *John Murphy* ow little, and am not competent to give any reliable evidence, Municipality rds Dried Milk on its medical dietetic aspects, I have experienc[illegible]n Toronto · years. I first became interested in it here in Dublin, chiefly [illegible]sition?—— experience among babies of the poorer districts in the city showed [illegible] quality of the Dublin milk supply is to say the least not above suspic[illegible] They t[illegible] some extent at least—I fear, to a fairly large extent—the milk suppli[illegible]e positio[illegible]e regarded otherwise than as poison for babies. That originally turne[illegible]ed was [illegible]ntion to the matter of Dried Milk.

[illegible]but of [illegible]ence of Dried Milk for the two or three years I have been interested in it [illegible] I found it to be not only of equal nutritional value to good cow's milk. [illegible]t seems to me to possess in addition certain medicinal qualities. I think the latter fact is due to this—the clot produced in the stomach by Dried Milk is nearer in its character to human milk than ordinary liquid cow's milk, which means a great deal for babies and infants who are suffering from gastric and intestinal troubles. When I speak of Dried Milk I mean the really good brands of it.

266. *Chairman.* Full cream Dried Milk?——Yes. There are a big number of brands of milk branded as full-cream which are not really full-

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cream—which have a good deal less than 3 per cent. of fats in them. I have had scores of experiences of this kind—an infant has been steadily losing weight and going into a condition of *marasmus* while being fed on the ordinary cow's milk. On being changed over to Dried Milk brands of good repute (like Glaxo or Cow and Gate) it begins to thrive and put on weight. I have not seen any ill effects from it—no rickets or scurvy. There does seem to be a certain tendency to constipation which can be easily obviated by adding a little sugar.

This applies particularly to the summer months when the fresh milk gets quickly contaminated, and when on account of certain types of diarrhoea the infant mortality is highest in Dublin. The milk may be good milk; it may be pure milk; but in the foul air of the tenement houses—houses in the slum districts—even the best fresh milk gets contaminated in a very short time. A great advantage, of course, about Dried Milk is that it can be exposed to the foul air of the houses in these districts without being affected. When a tin is opened it can be exposed for weeks in the foulest air without being contaminated, so long as it is kept dry. A bacteriological fact explains, I think, the preventive and curative effects of Dried Milk. It is a technical point, but perhaps it would be of interest, as it is a point of practical importance. With ordinary care and cleanliness milk as it leaves the cow contains 1,000 to 2,000 bacteria per c.c., but by the time it reaches the consumer, perhaps, six or seven hours later will contain from one to two million per c.c. which the

Months after its manufacture, and weeks after its expo reasonable wa when the tin or packet is opened) the proportion of bacteria in Dried cellent resp ally less than when it left the cow. That, as I have said, is a actical importance in a city like Dublin, where infant mortality is ers' Co-open the tenement houses of the poorer quarters. The foul air of su ourers will would contaminate, in a very short time, the best and purest milk, course the were obtainable. becomi

Another point is this—a large number of the poorer people in ve places do not, for economic reasons, buy milk by the pint or quart, but in pe ule ths, twopenny worths and threepenny worths. The result is, of course, milk costs them a couple of shillings a quart very often, for that reason. One of the great advantages of Dried Milk is that it is sold at a standard price generally, and you can re-constitute Dried Milk to the exact amount you require at a time. It comes to this anyhow. People in these districts—and this is the reason I am interested in the matter—get poor milk, and in addition to getting poor milk, they get contaminated milk. I have seen some of the milk sent up from Limerick and Tipperary. It is good sound milk—of course it is standard milk—when

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being sent up from there. When it reaches the consumer in these places the milk is thick, practically.

267. *Chairman.* Sour?——Sour. Considering all the circumstances of the matter, if I had power to do it I would put every baby in the city of Dublin, at least every baby of the poorer classes of say under two years old, who is not being reared on natural breast milk, on Dried Milk, and I believe such a course would go a long way to reduce the high infant mortality of the city.

I have seen statistics of infant mortality in continental towns, like Bruges and Ghent, where the mortality was as high as Dublin, and where after Dried Milk was introduced and used fairly extensively the mortality fell to sub-normal. I don't say that was entirely due to Dried Milk, but it was a big factor in the case. I have also seen reports of Medical Officers of Health of English industrial towns, and reports from Infant Welfare Centres, and they attribute in large part the reduction of the mortality to the use of Dried Milk.

There is a special point I sometimes think is often lost sight of. The infant mortality here is bad enough—could not be much worse—but we often overlook when considering it, the thousands of babies who survive, and a large number of whom grow up with delicate constitutions and lowered vitalities, making up the great army of chronic invalids, and becoming later on an easy prey to tuberculosis infection and crippling diseases of all kinds. The seeds of all these are sown in infancy with contaminated and impoverished milk.

My own experience with Dried Milk is comparatively limited, because of *enforced holidays* these past few years, but such as it is, I have had nothing but good results. To give a practical example of the value of Dried Milk. A week or two ago I had a case of typhoid fever, a little girl of ten or twelve years. As you know, the chief diet in typhoid fever is milk. I could not get her to take milk under any circumstances. She kicked absolutely against it. I tried her on Dried Milk. What I did was this. In about two tablespoonfuls of liquid milk made from powder, I had the same amount of nutriment as there would be in a pint of ordinary milk. She took that, and it struck me as a very practical example of the value of Dried Milk. I think the same thing can apply to tuberculosis and diseases of that kind, where a large quantity of milk is consumed—where patients kick against the quantity and where it can be given in concentrated form.

One big advantage in Dried Milk is, that in the process of drying a large number of dangerous organisms are destroyed, for example typhoid, and tubercular bacilli, and other dangerous bacteria of that kind. I have read the

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opinion of many of the best specialists on infantile ailments, and the majority have nothing but praise for it as an infantile food. All agree in this—that where the pure fresh cow's milk is not obtainable, there is no better substitute than Dried Milk.

Objectors say they did not find that it increased body weight, and say the powder does not keep well. They complain of unpleasant odour and taste. I have heard that a new drying machine has been invented in Germany recently which does away in large part with this objection. The sooner the powder is used after manufacture the less unpleasant is the odour and taste. One authority says that Dried Milk should be used within two months of the manufacture. I have myself used Dried Milk for household purposes—for tea colouring and milk puddings, and I find it excellent.

As regards its use for adults, I have no experience. I have read the experiences of doctors, and it seems to be specially useful in such cases as gout, Bright's disease, etc., and seems to possess certain medicinal properties owing to certain substances, which exist in ordinary liquid milk and which are injurious in these diseases, being destroyed in the drying process. Dried Skim-Milk is especially useful in such diseases. I believe it is the Dried Skimmed Milk which is manufactured in Waterford, and used for commercial purposes, such as cheaper chocolates, sausages, cakes, biscuits, etc.

268. *Chairman.* You mention in your abstract, Dr. Hayes, that constipation is sometimes caused as a result of feeding on Dried Milk.——That can be easily overcome. I have overcome it by adding a little sugar.

269. Have you ever tried altering the normal mixture to a stronger mixture ?——Yes, that would do it. The cause might be a too weak solution.

270. I am told that is quite correct—that a stronger solution gets over that difficulty.——I generally manage with a little extra sugar.

271. *James C. Dowdall.* Are you aware what temperature milk is when it comes from the cow ?——I could not tell you exactly.

272. It is about 98° F. At that temperature, unless the milk is cooled immediately, it would be very favourable for the production of bacteria ?——Very favourable.

273. Perhaps the most favourable?——Yes, it would be mid-way.

274. Accordingly, unless milk is properly treated it is a very fertile medium for the growth of such ?——Yes, one of the most fertile, unfortunately.

275. With Dried Milk, the process it goes through in drying is rapid evaporation, and any deleterious organisms are destroyed ?——Yes.

276. It has been gererally held, up to the present, that if you bring milk

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to a temperature above 140° F. you destroy the anti-scorbutic properties of the milk ?——That is not so in my experience.

277. Your experience goes to show it is not ?——I have never seen a case of scurvy after Dried Milk I have seen reports of other Medical Officers and they haven't seen it.

278. I must confess that I saw that in your evidence. It was rather against what I have heard. I have been told that it did destroy the value of food as a preventive of scurvy.——That is one of the objections raised. I have never seen a case. I was going to mention that my experience is limited, but I have seen the recorded experiences of those who have got bigger experiences than I have. I have seen records of 800 babies put on Dried Milk and no case of scurvy, and of 1,000 and 1,200 babies and no case of scurvy. That would be for eight and twelve months continuously.

279. *James C. Dowdall.* If it were found that the use of Dried Milk for feeding infants might possibly give rise to scurvy, is there anything that could be added to the food that would prevent it ?——Oh, yes, a little orange or other fruit juice.

280. So that that is not an insuperable obstacle ?——No.

281. Copenhagen, strange to say, like Ireland, suffered some years ago from an enormous infantile mortality. They put up such an organisation as Mr. Smith-Gordon outlined, and greatly improved the conditions. It has been said that Pasteurization, or sterilization, kills everything that is good in the milk. That is not your experinece.——Of course there is a distinct difference between sterilization, or Pasteurization, and the drying process. Pasteurized Milk is very dangerous sometimes. The milk is apparently sweet —it is not sour—and, at the same time, it may be reeking with bacteria. That is one of the dangers of sterilization.

282. *Thomas Johnson.* Do you know anything about the comparative cost of Dried Milk with liquid milk ?——No. I don't know anything about the comaprative cost. Glaxo, which is a most popular brand, is sold in 1/6, 3/-, and 7/6 tins.

283. What quantity of milk would a 1/6 tin make ?——I don't know, although I have used it myself for tea colouring.

284. *James C. Dowdall.* Are you aware where Glaxo is made ?——Yes, New Zealand has, I understand, the chief factory.

285. It is made in Waterford.——I think that product is not used for food purposes. I understand it is used for commercial purposes.

286. It is used for both.——I thought it was used purely for commercial purposes.

287. *James C. Dowdall.* The point I make is, that it is made here, but it is invoiced through London.

288. *Professor Ryan.* In regard to the question about drying the milk, of course, drying the milk will sterilize it, won't it ?——Yes. Of course in some of the processes the temperature is not raised to 100°. Milk is shot into hot air in a partial vacuum, and drops as powder on the floor of the drying chamber. The milk is not exactly subjected to 100° centrograde.

289. You mention that you have never seen a case of rickets as a result of it ——No.

290. *Witness.* .I would like to add that I have heard, from a fairly reliable authority, that a drying apparatus can be installed, and a thoroughly sanitary factory provided, at a cost of £20,000, leaving £4,000 or £5,000 for reserve—and that such a factory can deal with 1,000-2,000 gallons of milk daily. One of the great secrets of good Dried Milk is that it should be begun to be dried as soon as possible after the milk leaves the cow.

EVIDENCE OF JAMES FANT, Creamery Expert to Irish Agricultural Organisation Society.

291. Mr. Chairman and gentlemen, I have just got down the headings of the points with which I propose to deal. The first of these is Cow-Testing Associations at creameries, and all other agricultural concerns where dairying is of local importance. You have heard already from Mr. Anderson, and from other witnesses, of the importance of these associations and the details as to how they are carried out. I only wish to confirm that, and to say that every effort ought to be made to bring home to the farmers the importance of it. The local press can do a great deal. The principal paper the average farmer in the country will read will be the weekly paper, which is published in the nearest town. It may be the county paper, or the paper in the nearest town to which he lives.

Propaganda will interest particularly the young farmer, who possibly will take more interest in the thing, and is not averse to the little trouble it involves. It is a very great difficulty to get Cow-Testing Associations going. Therefore it will require every source that can be secured in order to make

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it successful. Then the creameries might assist also by providing better facilities at their centres—larger testing rooms, and facilities in every possible way for the carrying out of the work. It will help them both directly and indirectly, enlarge their business, and generally give them a better outlook. They can help very considerably in carrying out the work.

The next item is, the combined efforts to introduce milch cattle of large milk records to displace the unprofitable cows in herds. There again comes in a great difficulty. The farmer, if he breeds milch cattle, his good herd of young stock are very often brought into fairs, and either sold by auction or sold in the public fair, and go elsewhere. Sometimes they are bought up and shipped, and the district has lost the advantage of having them. Some efforts ought to be made by a local committee or otherwise to endeavour to keep these animals in the parish or district in which they are bred. In that way there could be a good deal done to help. Say, if a local committee were established and the farmer desired to buy some cattle of a good milking strain, he could apply to them. A local committee may act as a clearing house for placing in the right hands cattle of a good milking strain produced in the locality.

There is another matter. Arrangements at creameries for supplying milk by retail to all who require it in each creamery district. If a retail department were established, or small shop (call it what you may), or a creamery, especially in a town, or village, where a creamery could sell by retail to all, in a sanitary state, such quantities as they needed, it would confer a great benefit on many districts, particularly town and village districts; also to districts which are fairly thickly populated it would afford the means for labourers to get supplies of milk from creameries.

A farmer, for obvious reasons, does not like retailing his milk—a pint here and a pint there. It would be far better if the creamery did it. Also a creamery could keep a regular supply throughout the winter. Even if they only got milk three days a week, Pasteurizing it they could keep the supply and they could retail it on seven days a week. In that way a great deal of benefit could be conferred on the community at large—by retailing it, by a creamery supplying its own people first with milk produced in the locality.

The next item includes arrangements for preparing milk for sale in towns and cities during winter and early spring months. In this connection, creameries will be very slow to enter into this business at all unless there can be a regular business established between creameries, which lay themselves out to supply towns which require milk. I have studied this matter for some years,

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and what appears to me to be the solution of it is, that if Dublin is to provide a proper milk supply for its citizens throughout the year—a milk supply that is not alone naturally pure, but is also bacteriologically pure—it will need to establish on commercial lines a company or society, or association, which will be able to receive that milk, and treat it for distribution; or treat it for storage, as the case may be; and to deliver it to the consumer in such a manner as to avoid the sources of contamination that there are in the milk supplies to towns now. I don't know of any town in Ireland where the milk supply is guaranteed pure, in the sense that it doesn't convey disease. That is an unfortunate state of things, and I think it is one that should not be allowed to continue, if people in this country can use means of providing it otherwise. It is not of such very great difficulty if a company, or society, or combination of citizens, will provide, at their end, proper means for receiving and preparing for distribution, such milk.

It might be done in this way. Take a local Society here. They might acquire large premises and equip them with cold storage for dealing with such milk, where they cannot distribute it; and for holding in reserve a twelve hours' supply, at least. Such a firm would also take the milk that might be sent by rail, or otherwise, from surrounding farms, within ten, twenty, or thirty miles of Dublin. As it comes by car or rail—whichever it may be—that milk ought to be treated in the same manner as a creamery would treat milk for sending longer distances. A beginning has been made in this direction, on very successful lines, in Belfast, by some eight or nine creameries, that began to work about a year and a half ago. They have been able to send milk to Belfast in the warmest time of the year, that keeps forty-eight, and sometimes sixty hours at a time. They did it successfully under difficulties. If they had better facilities of distributing, and had cold storage and that sort of thing, they could still do better. The creameries are the sources of supply—a combination of creameries—and the senders are the distributing agents in Belfast.

I don't say a similar state of things, as regards ownership, can take place in Dublin, for the reason that the creameries are situated long distances from Dublin, and you will not get the farmers of Cork, Tipperary, and Waterford to be parties to such a distributing arrangement in Dublin. They did it, it is true, in Belfast, within a radius of about thirty miles. They were obliged to do it, for the reason that if they didn't do it, the milk companies of Belfast would go and tap their milk in their creamery supply area. In that case the farmers would lose control of the milk. The same state of things is not

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likely to force the farmers of Limerick and Tipperary into coming up and distributing in Dublin. Another reason, it is the business of the citizens of Dublin to undertake the work, if they want milk, and buy it where they can. The purity of the milk supply, and the regularity of a pure milk supply all the year round, are the chief objects. If it is expected that the creameries shall deal in this matter, they must deal with a corporate body in distributing centres, and that corporate body must belong to the consumers. The producers, on the one hand, will deal with a combination of consumers on the other hand.

Then I have to deal with suitable milk receiving and distributing depots in each town controlled by local consumers on co-operative lines. It must be the combination of distributors who will accept the whole risk of distribution. There are many difficulties in the way of it. One of the principal ones is the railway transport. There again the organisation of the producers and the consumers can solve that. No other arrangement that I know of is likely to solve it. A combination of distributors for instance, in Dublin, might be such as would have a railway van of their own, into which they would put their own cans, going into a centre that will supply a large quantity of milk.

For instance, if arrangements were made with a large creamery to send 2,000 gallons into Dublin, there is no reason why that van should not be going to the railway station nearest the creamery and back again. In that way, lost cans can be reduced to a minimum. Then again, a distinct type of can, which may have all the advantages of sanitary arrangements about it, might be made—one that would be distinctive entirely from such cans as are in use now. In that way, the losing of cans and the tracing of them can be easily solved.

In England there is a Can Protection Society, to which all distributors of milk contribute something. Here it may be difficult to establish such an institution, but the railway people, and others, might lend a hand to prevent these cans getting into wrong hands. I know of a creamery that used to supply a lot of milk. They had £300 invested in cans each year and lost more than half of them. Very often their cans were running out. There is no system of milk supply that will permit that to continue. If it were organised on a large line a creamery could have 60 or 80 cans of milk each day, and a special waggon could be arranged for them. I understand, the railway company have already made such an arrangement between a large southern station and Dublin. They run a van each day with the cans, and the van goes back

again with the empties. That could be done on a larger scale with more than one creamery.

The last item I have is, Dried Milk, and the commercial problems associated with it. So far there is no Dried Milk made in co-operative creameries, and my opinion about it is rather limited. We are making arrangements for erecting, as an experiment, a milk-drying machine. That is, with a view to converting some of the milk now converted into cheese into Dried Milk for commercial purposes—for chocolate-making. If the experiment proves successful, it can be tried also to see how far it would suit for milk supplies. Difficulties will occur in the case of creameries. One, will be the cost of the plant to do it all the year round. Another, will be the difficulty of putting it into small packets of a pound or otherwise. I think a distributing agency here might overcome that. What would suit a creamery best would be to put it up in cases of one cwt. or so, and let it be put in smaller packets by some distributing agency.

292. *Chairman.* You mean an establishment that will organise the distribution of Dried Milk ?——Yes.

293. You don't think the creameries themselves would be able to undertake the marketing of it ?——I think it would be very difficult for them to undertake the retailing of it.

294. They might sell to wholesale houses, and large quantities put up in small packets might meet the difficulty ?——There were two or three other items which arose out of your investigation this morning. One of these was the question of cold storage. I think the time has come when co-operative creameries must select a cold-storage of their own in Ireland to meet the glutting of the butter markets, which very often is engineered by people in the trade, and people on this side suffer over it. How far that will be possible for some years to come, I don't know.

295. Would not that be part of the grading and standardising arrangement—all in the one department ?——Yes it could be part of a distributing centre. The time has come when a cold store ought to be erected in Ireland, and controlled by the Irish people, and supplies of butter held for the winter there. Mr. Lucy told you he kept in his own creamery for some months some butter which he didn't cold store at all. Several creameries have done the same. By keeping butter made from Pasteurized cream that can be done. It can be done still better by having cold storage.

296. Can you tell us what was the cause last year, and the previous year, of butter that was released from cold storage, turning rancid ?——That butter

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was not good going in. If it had been well-made, Pasteurized-cream butter going into cold storage, and the temperature maintained all right, it would come out all right. I have seen a good deal of it this week, and the week before, that was put up in June this year, and it is absolutely perfect. I have seen a few lots come out that were not perfect.

297. Not only not perfect, but very bad after twenty-four or forty-eight hours out.——I haven't seen any butter of that class. I have seen some of it that certainly was not very good.

298. *James C. Dowdall.* Has it ever come to your knowledge that where butter goes wrong, or is rejected by a customer, and returned to a man, he puts it into cold storage ?——I have not seen cases of that kind, but I have seen cases where, if he had parted with the butter—if it had gone across channel —he gave instructions to have it put in cold-storage, and a good many cases of it being brought out again and sold.

299. Your belief is, if butter is faulty going into cold-storage, the operation does not make any material difference ?——No, it will get bad more rapidly when it comes out again.

300. That is my experience too. You cannot cure a bad egg. With regard to cold-storage, you say a cold-storage controlled by the people should be established ? There is a pretty extensive cold-storage in Dublin ?—— There are two of them. There is also a cold-storage in Cork.

301. If you were starting a creamery of your own wouldn't you instal a refrigerating cold-storage chamber ?——If it were a large creamery I would be inclined to do it. If it were a small one, then again the question of power comes in.

302. I have had considerable experience of Canadian and New Zealand butter. That turns up in perfect condition, but it is cold-storaged from infancy. I suggest that there should be greater development among Irish creameries than there has been.——Very soon there will be, with the establishment of suction gas engines.

303. You told the *Commission* that none of the co-operative creameries has yet started Dried Milk, but that it is contemplated to start it. Have you made up your mind what system you intend to use?——This is only an experiment. It will be the Milanroods.

304. I suppose you know for that purpose you will require superheated steam?——We can get steam at 120 pressure.

305. Have you gone into the relative financial returns from Dried Milk as against butter and cheese-making?——Yes. Assuming that the yield would

be 125 lbs. of Dried Milk per 100 gallons, and that the selling price would be 180/- per cwt., it would give a gross return of 1/7½ per lb., from which 4½d. should be deducted to give the nett. return. That would be a nett. return of 1/3 per lb.

306. On Dried Milk?——Yes. Then assuming it was only 115, it would be 1/6. There would be 4½d. to be deducted out of these figures to arrive at the nett. Such Dried Milk would be put up in cwt. casks.

307. 4½d. per lb. of Dried Milk.——That would be, approximately, 1 1-8 lbs. per gallon. That is whole milk, but Dried Milk contains from 26 to 28 per cent. butter fat.

308. Your Dried Milk would be too fatty?——That would be, assuming summer conditions.

309. You mentioned, in connection with ordinary natural milk, that the organisation, or company, in Dublin should have a cold-storage for the milk. Is that being done here now—is milk being cold-stored.——Yes.

310. Are there any dangerous abuses in connection with it?——A distributing agency that is doing a fairly large business could hardly avoid such. They would only keep milk twelve hours in reserve.

311. I thought you said that in Belfast they would keep it forty-eight hours?——Milk would keep that length of time—even sixty hours they kept some of it on their premises, and it was quite good. They don't do so on a regular business.

312. Can you give, as shortly as you can, the difficulties you see in the way of winter dairying?——The raising of food for the production of milk is one difficulty. Labour is another difficulty, and a very serious difficulty, too. The greatest difficulty of all is, to convince a sufficiently large number of farmers, so that they will all go into it at the one time to make it a financial success.

313. With regard to the raising of food, did you go into the system of albuminoid ratio?——I did.

314. Is it possible to get this system wider publicity in Ireland? I ask the question, because I never have heard it advocated.——The food part of the question is the most serious difficulty. I think to get a suffcient number of them convinced that it will pay to undertake it will be the biggest difficulty of all. Labour may be next.

315. I have had the same experience—the difficulty of getting a sufficient number. Just one question with regard to milk-testing and the taking of samples. I think you said, or perhaps it was Smith-Gordon, that when they sent

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milk up to Dublin, samples were taken and they were prosecuted. They defended the prosecution successfully, but still it is not encouraging to people to send milk. What is your view of the manner in which samples are taken?——My view is this: I think, in the case of a creamery, for instance, sending milk, cans ought to be sealed until they reach their destination—the purchaser. The seal ought not to be broken elsewhere, and the full contents ought to be mixed thoroughly before any sample is taken out of it.

316. How would you mix the contents?——There are various ways—pouring from one vessel into another, or by a proper stirring apparatus. Of course, it is better by pouring from one vessel into another, especially milk that has been held hours until some of the cream has risen to the top. I would go a stage further. I would say that the purchaser of that milk ought to have some assurance that the sample that was analysed was the sample that was taken there and then.

317. How would you ensure that?——The purchaser's signature ought to be across the seal. I would like to know what is happening to all the milk that is coming into Dublin that is under 3 per cent. fat.

318. A good many people would like to know that.——I would like to know is it cerameries that have been singled out for prosecution. It is very remarkable. If such things are allowed to continue, I can tell you that no prices will get them to send milk to Dublin.

319. You know creamery managers very well?——I have been twenty-five years among them.

320. Do you think any creamery manager you have met in your experience would be guilty of the dirty fraud of watering his milk?——I do not. I would say one or two men admitted a mistake, which occurred through their own staff. That was a perfectly genuine mistake, which may occur to any business-man. The large number of creameries singled out for prosecution is nothing less than a public scandal—singled out for prosecution, in order to keep their milk supplies out of Dublin. I say that with a very great deal of feeling.

321. Eliminating the bad cows through cow-testing, do you think through the Organisation Society the creamery managers might be very helpful. They come into touch with the farmers very directly, and they might begin a campaign urging on them the imperative necessity of increasing the percentage of good cows?——There is quite a large number already doing that. The Department of Agriculture have lecturers going through the country, and the managers arranged for lectures at the creameries. As I told you, in the early

stages, it is a very difficult problem to carry through. You will find half a dozen men in a community who will take it up, especially the younger men. You needn't appeal to the older men. They consider they are doing well enough.

322. *Thomas Johnson.* Is the real difficulty carelessness on the part of the farmer?——Very largely.

323. Is there any trouble?——There is a little. If a man is keen on it, he will do it, and won't find it any trouble. Sometimes the greatest trouble is to get them to begin it.

324. Somebody suggested a supervisor. What would the cost of a supervisor be?——I haven't gone into that. The Department of Agriculture have such men.

325. With regard to Casein. What is your experience with regard to its commercial value?——In pre-war days it was of some interest to creameries when there was little demand for the bye-products of milk, such as separated milk. In those days it used to be worth three farthings to one penny farthing per gallon. I am speaking of nine or ten years ago. This price would be no use now, consequently there is no occasion now.

326. It isn't a commercial proposition to suggest a re-entry into that manufacture?——No; except the prices are four or five times what they were before.

327. In regard to the respective merits of an organisation for distributing in the city—farmers' Societies or consumers' Societies—I am familiar with a certain controversy carried on some years ago. The I.A.O.S., or some of its advocates or friends, strongly advocated an organisation by farmers, as against an organisation by consumers. You seem to differ—In Belfast the farmers may do the distributing; in Dublin, the consumers.——In Belfast they were forced to do it. Either that or it would be done for them at their expense. In the case of Dublin, I don't see any such inclination on the part of the farmers to do it. They would be against cheese and dried milk for export, and up against butter.

328. Are they not that way in Belfast?——They are, but the Kildare farmer is not bothering his head about the milk supplied to Dublin; nor the Kilkenny man. I can tell you, the Co. Antrim farmer wouldn't bother his head about it, if he could get out of it.

329. You say the Belfast consumers were aiming at the farmers?——It was the Belfast vendor of milk who was going out to the creamery districts and taking the milk from them.

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330. The Belfast consumer also?——I daresay he was having a hand in it.

331. Have you any idea of the Belfast system of cold-storage?——They have a good cold-storage.

332. Is their method of distributing satisfactory?——I think it is quite possible that it could be improved in some lines. They might employ barrows. The system they have in Plymouth, I think, is nearly perfect enough. They don't need to have bottles there. They can distribute off the handcarts.

333. You seem to think an arrangement could well be arrived at between the organised consumers in Dublin and the federated farmers in regard to price —you think there could be an agreement come to by some means of bargaining without great friction?——I think an agreement could be come to. It would have to face all other commodities, such as the price of butter, the price of cheese, and it would have to fluctuate within certain limits from month to month.

334. We were told early this morning that the prices of butter and cheese are not on a parity.——I am speaking as to the future. There will be some basis that will have some relation to the other products of milk. For instance, you could not make a contract four or five months ahead, except on some basis that will have some relation to the other bye-products of milk.

335. You think there is no means of arriving at a standard price?——I think it would be very difficult.

336. *Chairman.* May I ask you if the standard was raised, wouldn't that standard need to be very high to cover fluctuations ?——If there was a difference of 2d. a gallon for milk prepared for consumption, as compared with the value for butter making. The price of butter would then regulate the price of milk.

337. If a farmer was asked, or a creamery manager was asked, to guarantee a price for six months, they would put in a price that would be quite safe to them.——If they had to put in a price, they would have to speculate. If, on the other hand, there was a basis of, say, 2d. or 3d. between the value of milk for butter-making and that for consumption, it would be fair to both parties, and it would avoid the element of speculation.

338. *Thomas Johnson.* You have no idea of the cost of distribution in Belfast?——No, I have not, but I could get the information.

339. You don't know what quantities they are delivering?——They do 1,000 gallons a day.

340. Through shops?——They have some of their own shops. They also supply retail shops and institutions—colleges, and institutions of that kind.

341. *Professor Ryan.* Supposing you advise creameries, with regard to the plant, how do you fix the horse-power engine? Is it with regard to the milk used?——It would depend on the number of engines that would be working.

342. Taken on an average?——The average factory would have about a 30-brake horse-power.

343. There are creameries doing other work, such as milling. You require a little power to mill corn.——That engine would be designed, not on the amount of milk a creamery would receive, but on the other works it would be carrying on.

344. What engine, say working 52 hours a week, would work 830,000 gallons of milk?——30 horse-power engine.

345. How much coal would that use in the week?——Seven to eight cwts. That would be power coal.

346. You spoke in regard to the power required for a refrigerating plant. What would be the minimum gallons per annum for which a refrigerating plant could be used economically?——300,000 gallons up to 1,000,000 gallons.

347. 300,000 would be the minimum ?——Yes.

348. That would do for a refrigerating plant for cold-storage?——Not for cold-storage.

349. For cold-storage, what would it be?——I would say about 750,000 gallons.

350. Some creameries are using suction-gas-producers?——Yes.

351. *E. E. Lysaght.* What is the southern station from which this van is, at present, bringing milk?——Limerick.

352. Is that the farthest distance from which milk can be brought as required to a big city?——There have been creameries in Kerry sending it to Cardiff.

353. *Roger Sweetman.* It occurred to me, in connection with some of the references to the great overlapping of carts, that there might be a scheme devised by which motor transports would come along picking up the milk.——There is a street in the city to which eleven carts come twice a day. It would

be one of the means of working a milk supply if you had a Central Federation—sending their vans out twenty or thrity miles and bringing the milk from the farmers, if the farmers had an ordinary milk-cooler to cool down the milk.

EVIDENCE OF PATRICK COLEMAN, Manager, Nenagh Co-operative Creamery.

354. I have little to say, as Mr. Fant has covered the ground I intended to go over. As regards Cow-Testing, there is no doubt that it is badly wanted. I have been trying to get the farmers to organise for some years to start Cow-Testing Associations, but the farmers are slow. They were slow and they are slow. One great argument is to point out to them that their cows are only giving them about 450 gallons a year, whereas they could easily get a cow to give double that amount, and by having such a cow, that it would mean less labour. If a farmer can have ten cows to give him the milk of twenty, it would be less labour, and they can deal in lots of other things.

The only advantage to be derived from bad cows is manure. The farmers point out that they could not very well do this, if they hadn't the capital. They say, " I have three bad cows; what am I to do? I cannot replace them." The day has come when the farmers have money, and now is our time to press the matter. We ourselves, amongst our Associations, have agreed to press it home now on the farmers—to start Associations. Of course, it has been proved by Mr. Lucy a very great success in any district where they have been taken up.

Another thing is, in towns you will find auctions of in-calf heifers in the fair. They look all right, and a man sells them for what they are worth. They are engaged to calve at a certain time. If you trace those heifers to where they came from, and see the bull, you will get a surprise. That has been proved beyond aye or nay, that their marketing strain must be worked back to the bull. That has been successfully proved years and years ago.

The other things which run down our milk supply are the shortage of labour and the high price of beef—the equivalent price of beef in comparison with the price of milk. A farm labourer doesn't like Sunday work and the long hours.

Milk, Milk Production and Milk Products.

Patrick Coleman.

2nd December, 1919

As regards the distribution of milk in cities and small towns, Mr. Fant pointed out a very good idea about the creameries Pasteurizing milk for local people. That is an excellent idea. We were sending milk to Dublin, and gave it up as a bad job, for the reasons explained already. If you take the analysis in the Dublin papers, a peculiar thing I always notice is, that they are all " 7.30 per cent." of deficiency in fats. I wonder how they arrived at this percentage. It is nearly the one deficiency. There is something doubtful about the testing of the fat contents. We gave it up for a bad job, for different reasons. We were never fined for sending milk deficient in milk fats. We had a great difficulty—next to a local war—with the towns-people about milk. We solved it very easily. We had a conference with the Urban Council, and we arranged with the Urban Council to form a milk depot in the town. The farmers objected to give the milk without getting separated milk back, and we arranged to give the farmer who supplied the depot with fresh milk the equivalent of separated milk at the creamery, for the amount of new milk he left in the depot, with the result that there is an excellent supply of milk in the depot for the poor of the town, and the whole thing is working smoothly.

355. *James C. Dowdall.* I see your yield, by the Return you furnished us with, is very good. It is 24.37 per pound of butter.——It has been that exactly for three years. This year it wasn't so good. I attribute that to the great shortage in the spring this year of good food. The cows were very weak when they went out on grass, and the first thing a cow must do when it goes out on grass, after calving, is to build up her own frame before she can give good milk. In order to do that, when they are weak, it takes a long time before they can give good milk. Then the grass was not so succulent as in other years. In the latter months, for instance our produce was as good, if not better, than previous years.

356. You use a milk-tester yourself. What is the lowest test you got? ——We have a very good average. Some people in the town—a lot of people —have a cow or two for their own household purposes, and they would send us down the balance of what would be left over. Very often they may run a low test.

357. You don't find many under 3 per cent?——Not the regular milk supplies.

358. You say cheese-making wouldn't suit Ireland. Why ?——If we were to continue cheese-making, what would be the result in a few years hence? Isn't our idea to build up a future?

Milk, Milk Production and Milk Products.

Patrick Coleman.

2nd December, 1919

359. I don't mean exclusively cheese-making, as an alternative to butter.——I couldn't define the quantity of cheese to make.

360. They sell a lot of yearling calves about August and September.——In our part of the country they go into Limerick and buy calves and rear them.

361. *Thomas Johnson.* Do I understand, when making butter, you take samples of milk as it comes from each supplier, and pay him on the butter fat?——Yes.

362. What is the method of paying the farmer when sending whole milk to Dublin?——That won't have anything to do with the way you pay the farmer. His sample is taken when it comes on the platform. That milk you are sending to Dublin is Pasteurized.

363. I am not assuming you send the whole of the supply at the one time.——No; only a quantity. About sampling the milk for Dublin, there was a thing I discovered in the railway about sealing cans. I got a seal made with our own registered letters—NENAGH. I sealed the lid in the usual way, and found out, after following the cans to Dublin, that some cans I tested, and kept a duplicate of, were short. I followed a can to the railway, and discovered that in handling in the railway, they didn't mind whether it was sealed or not. They managed to turn over the lid and the milk gradually drained out into a bucket. That can was short when it came to Dublin.

364. *Professor Ryan.* What is the number of hours, per week, the gas-engine is working?——We took the month of July. It is published in the *Irish Homestead* of August, giving a detailed working account of the number of hours working, of the amount of anthracite—we use steam coal—and the quantity of butter produced.

365. *Secretary.* Do you remember what date?——It was to Mr. Fant I gave the Returns. It was for the month of July. It was published about the second or third week in August—a detailed account. It is very interesting. One of the things that struck me forcibly, from time to time, about water power is, that there is too much attention paid to it. If suction gas-power were better known, isn't it an excellent power, when you take into consideration the uniform speed.

The figures to which witness refers will be found in a Table on the opposite page. The entire quotation is taken from pages 692 and 694, vol. xxvi., of *The Irish Homestead.*

TABLE SHOWING THE RECORDS REFERRED TO BY MR. COLEMAN ON PAGE 82.

Milk, Milk Production and Milk Products.

Patrick Coleman.

2nd December, 1919

"The producer plant was cleaned out and recharged on five occasions during the month, the fire being kept on continuously day and night for the intervening periods.

"The following are the records:—

Date July, 1919	Period of Working Hrs.	Ms.	Fuel Consumed: Anthracite Coal lbs.	Fuel Consumed: Steam Coal lbs.	Butter made lbs.
1	8	10	291	317	2,234
2	8	20	66	250	1,879
3	9	5	87	287	1,815
4	7	40	66	261	1,790
5	7	30	94	261	1,763
6	6	0	366	230	1,749
7	8	10	66	300	1,500
8	8	30	66	330	2,105
9	8	0	99	300	1,876
10	7	30	66	333	1,727
11	8	15	66	272	1,737
12	7	45	290	330	1,754
13	5	50	66	220	1,720
14	8	0	66	297	1,431
15	8	0	99	333	2,054
16	8	0	66	300	1,884
17	8	5	66	333	1,669
18	7	30	66	330	1,703
19	8	15	66	297	1,714
20	6	30	66	297	1,671
21	8	50	300	330	1,404
22	8	35	66	300	2,028
23	8	35	99	333	1,659
24	8	30	66	333	1,704
25	8	35	99	350	1,634
26	8	40	99	280	1,612
27	8	0	66	350	1,610
28	8	30	66	360	1,241
29	8	15	99	366	1,950
30	7	35	66	360	1,612
31	8	15	120	350	1,555
	247¼ hrs.		3,330 lbs	9,590 lbs.	53,784 lbs.

"(The engine used is a 27 B.H.P. electric lighting type suction gas, with its own producer plant attached).

"There was an average period of almost eight hours worked each day.

"The following summary of results will prove of interest to creameries and agricultural societies using power:—

Average quantity of anthracite coal used per hour, 13.41 lbs.
Cost per hour equals 5.73d., or per 8 hrs. day equals 3s. 9.84d.
Cost of anthracite coal (for power) per cwt. of butter made, equals 2.96d.
Average quantity of steam coal used per hour for heating purposes, equals 38.8 lbs.
Cost per hour equals 12.5d., or per 8 hrs. day, equals 8s. 4d.
Cost of steam coal (for heating) per cwt. of butter made, equals 6.42d.

"Total cost of coal per cwt. of butter made:—
Anthracite coal (for power), 2.96.
Steam coal (for heating), 6.42, equals 7.18d.

"Some of the coal belongs to stock somewhat more favourably acquired than recently purchased coal. This only affects the results to a small extent.

"The Nenagh Central Creamery churns cream for three Independent Auxiliaries, whose own local coal bills for separating are not included in the above Returns."

366. *Professor Ryan.* The only point is, you say water-power is available.——The water-power is taken up. There are three mills within a mile of the town.

367. There is another thing. Do you positively object to feed cows on roots, rather than on grass or hay?——That question would come more from the farmer's point of view. I don't approve of giving roots at all.

368. *J. C. Dowdall.* From the point of view of the use of milk for butter, a number do.——Another thing—the cold-storage of butter. You are very keen on that point, Mr. Chairman. You asked about butter coming out, going bad very quickly. That applies to nearly all cold-store supplies. As regards the cold-storing of butter, it is a case of "as a man lives so shall he die." If you put in bad butter, you know what will come out. I put in butter last year—a large amount. I had it in Cork, Dublin, and Limerick, to supply the towns during the winter time. It came out splendidly, but it was picked and graded going in. It is madness to cold-store bad butter.

368. In connection with that, there is only one exception. If there is a quantity of lime in the salt, it has a tendency to go "fishy."——A great advantage is, the best butter to cold-storage is unsalted butter.

369. That is how I found it out.——I remember during the 1911 Railway Strike, we had a lot of the unsalted butter, and it held splendidly, while the salted butter got fishy.

370. *Edward Lysaght.* What is the retail price you charge in Nenagh for the whole milk?——We charge 6d. at the creamery, and 7d. a quart in the town. We do very little sale of milk at the present time. The poor people get enough milk through the town.

371. What do you allow for separated milk?——We give 5d. to the farmers to encourage them to leave in extra milk. If we only paid 3d., they would not leave us the separated milk, and the poor of the town would have to go short.

372. Do you find the farmers are inclined to keep the best calves—from the best cows?——No, the farmer will sell the best cow.

373. *David Fagan.* In not sending milk to Dublin, was it in consequence of the analysis of the milk?——No. We didn't have any trouble. It was for preference, and we found cans weren't coming back.

374. You sent it to a contractor here in Dublin. The contractor lost your cans?——Yes. One contractor took over a neighbouring man's cans, and stamped his own name on them.

375. I have known that to be done too. About the analysis in Dublin, what point do you make?——If you take up the evening papers, you will find that a number of people are deficient 7.30 per cent. of butter fats.

376. *Chairman.* That is the standard.——Why not 7.25 or 7.40. That thing struck me.

377. *John Murphy.* In connection with the necessity for improving cows, it was mentioned earlier in the proceedings to-day that there is a difficulty in getting that accomplished, so far as the small farmer is concerned. There is no prohibition as to the quality of the bulls. Is there a remedy for that?—— One remedy is through the Cow-Testing Association. In a particular locality, where there are bulls for the public, they should be certified to be of a good milking strain. That is at the root of it, to keep the progeny of good milkers—to have a Watch Committee or Supervisor of the Cow-Testing Association, who would attend to them, and see that those heifers are not shipped or killed, or even sold in Dublin, where you will find an animal that has milked well, at the end of the year, slaughtered, which is a great pity; and not to buy heifers that are put up for sale at auctions or buy heifers at random at fairs, without having some guarantee of their pedigree.,

378. Has nothing definite been done up to this?——Oh, yes. One man in Co. Limerick has brought his milk up over 700 from 28 cows.

379. Then one of the greatest things we want to do in Ireland is to weed away the bad cows?——I do believe the average for my district, when I went into it, would be about 430 gallons. If the average is 430 gallons, how many cows are giving down as low as 200 gallons ?

380. *Edward Lysaght.* There are cows giving 150 gallons.——Look at the extra trouble. This cow has to be fed. You have to pay a man to save hay for this cow. Now that the farmers have capital, they should endeavour, in their own interests, to do this thing.

381. *Chairman.* They should expend it profitably in improving the breed. ——Yes. I have over and over again spoken to them on that point. If I were a farmer I would expend my money in something of that kind. I wouldn't be putting it into a bank to let it go away to be used, probably, for starting Cow-Testing Associations in another country.

382. *John Murphy.* Would it be possible to get the Creamery Managers' Association—because, after all, the farmers do consult the creamery managers as experts—to take more direct action in encouraging the farmers to adopt some system where by collective organisation they would provide good bulls for

breeding?——The creamery managers are very active on that point just now. They are doing their best.

383. You believe a good deal could be done, if there was some collective combination on the part of the farmers?——Yes, I do.

384. *Thomas Johnson.* Do you know of any case where a Cow-Testing Association has been established, and where the whole average of the district has been raised?——Every district where a Cow-Testing Association is established; that naturally brings up the average, even of outsiders.

EVIDENCE OF MR. JAMES GLASHEEN, Manager, Cullen Creamery (Messrs. Aplin and Barrett).

385. *Chairman.* You are a local manager for Messrs. Aplin and Barrett, whose premises are situated in England, I understand?——Yes, Battersea, London. I haven't come to make any statement, but just to answer any questions you may put to me, that would be of any advantage to your investigation.

386. *James C. Dowdall.* Did you ever work with your people in England?——No.

387. You have no idea of their progress there?——No.

388. Your place is near Limerick Junction?——Yes.

389. That is a very good district. Your returns are marvellously good?——Yes. We make good cheese.

390 What sort of cheese is that?——Cheddar.

391. (Referring to Return). It is the best record I have ever seen.* Have you any difficulty in disposing of the whey?——For some time past the farmers are not inclined to take the whey. They did take it rather freely, until they sold off their calves.

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* The figures referred to, from the Creameries Return made to the Commission, including the following:—

Cullen Creamery was supplied by.....180 farmers.
Owning in all.....2,400 cows.
Giving a yield of Milk.....10,022,516 lbs.
Manufactured into Butter and Cheese in the following proportions.....
22.6 lbs. of Milk to 1 lb. Butter.
10.8 lbs. of Milk to 1 lb. Cheese.
Three representative suppliers were given as having an average of 31 Cows.
Giving an average of Milk.....129,486 lbs.

392. Don't they feed pigs on it?——No.

393. Did you ever have to run any of the whey into the land?——We did.

394. I may tell you, it is a grievance I had with 100,000 gallons of it. Did you find any objection arise from running whey into a stream?——We didn't run any of it into a stream. We have a field we irrigate with the sewage.

395. Did you ever run the whey through a separator?——Yes.

396. With good results?——Better butter than we got from ordinary cream.

397. How did you find it keeps?——Splendidly.

398. Have you submitted it to an analyst?——I haven't.

399. I would advise you to do so.——We are contemplating putting up machinery to try to abstract powder from whey. I had some experience of milk powder. I made it ten years ago with the *Hatmaker* machine.

400. Your place is not very far from Tipperary?——About five miles.

401. Had you ever made Casein there?——Yes.

402. Can you tell us what purpose that Casein was put to?——They told us it was for commercial purposes. I believe a good lot of Casein is sold to make *Sanatogen*. I have a little direct knowledge of the fact. It is in connection with the Casein work the Culvert Works, Kildare, and the Phoenix Works, Tipperary, were started.

403. What quantity of your plant is made in Ireland?——So far as I could trace, we have two machines of £45 each, and six presses of £15 each.

404. Do you think it possible that the Creamery Managers' Association might direct their attention to get a larger quantity of their plant in Ireland?——I don't think it is possible to get cream separators, engines, or boilers.

405. You could get tractors in Cork, and you may get spindles.——Yes.

406. And, I think, you could get ball-bearings?——There are no ball-bearings now.

407. Where did you get them during the war?——We got some made in Limerick, at J. P. Evans and Co.

408. I will ask you to mention that matter to your colleagues, and ask them to do whatever they can to get any parts of their plant in Ireland that are available. There are a lot of things available in Ireland, if you look them up.——There is one thing that is very much neglected in Ireland. That is, the manufacture of rennet. I don't see why that couldn't be made. There are hundreds of calves' pells thrown into the river in Cork.

409. *Thomas Johnson.* That is the other side of Cork.——All over Ireland it is the same as Cork. If the thing is taken up, it would be a great asset to Ireland. There are thousands of gallons used daily in Ireland at about 26/- a gallon.

410. You don't export any cream?——We are not allowed to. We did export a lot.

411. There is no Cow-Testing Association in your areas?——No.

412. How far is your place from Solohead?——Three miles.

413. There are some Co-operative Creameries near Solohead?——Yes.

414. If a creamery manager struck a bad batch—his treating was not satisfactory—and he put a larger quantity—I will say—of skim milk into the making of his cheese than he otherwise would be disposed to, do you think it would trickle through to the body and interfere with it?——Yes.

415. I suppose some such cases have been responsible for the quantity of unsatisfactory cheese produced.——Owing to the scarcity of food, some Irish stuff was sold as cheese, which was not fit to be sold as food at all. It was simply a lot of curd. There is, however, great credit due to the creamery managers for the cheese they made. It was a revolution to start the making of cheese. Though it is simple, there are some technical points to be looked into, such as acidities.

416. *Chairman.* Was there none of the cheese from English dairies bad?——I have no knowledge of that.

417. *James C. Dowdall.* It would be the last thing I would try to do, to decry the produce of this country.

Chairman. They were in competition with other cheese, and it must not have been much behind, or they would not buy it. Even if it were as bad as you think, it wasn't much behind other cheese.

James C. Dowdall. You know there was a considerable quantity of cheese and butter sold which wouldn't be sold only for the shortage.——That is right.

418. There is a fair quantity of cheese machinery made in Ireland. Have the presses been made in Ireland?——Yes. Booth Bros. make those presses.

419. You spoke about a combined churn and butter-worker?——Yes. I am not in favour of that to make good honest butter. That was the recommendation with which the machine was sold—that you could put in extra water, which would save the price of the machine in one year

420. I wish to put this to you : when cream is separated in heavy thundery weather—in July or August—when that cream is churned, the butter is open in texture, and looks as if it was water-logged; whereas, in reality, the percentage of water is low.——If the butter is well treated and good ice-water used——.

421 I agree, if you have sufficient ice-water, but I have known creameries where they were relying on wells, and these wells ran dry in summer. Of course butter perfectly honestly made would look as if it was heavily watered, whereas, in reality, it was not. You spoke about cold-storage.——I would be in favour of each creamery having its own cold-store. The butter put in the cold-store would be under the direct supervision of the manager, who could see how it was proceeding. If it was rancid, he could sell it off.

422. I am very much disposed to agree with you, but the small creameries in the North of Ireland are scarcely large enough for that.——It is absolutely necessary to have a cold-storage in a central place. The extra power required to work a cold-store is very little.

423 As you have referred to the combined churns and butter-worker, and the percentage of water in butter, do you test your own butter for water? ——I do.

424. Which tester do you use?——The evaporation test.

425. What sort of a dish do you use?——A porcelain.

426. Do you put it over a tripod and stir it?——Quite so.

427. *Thomas Johnson.* In regard to the shipping of cream across the water, would you be likely to do it again if you were allowed, to your place. I suppose you sent it to your own firm?——We sent it to our own firm. If I were to sell cream to any outside firm, I wouldn't do it.

428. Do you know of any firm sending whole milk?——A good many firms sent it to Wales last year.

429. *Professor Ryan.* You said you tried the manufacture of milk powder from whey?——We are going to instal machinery for that purpose.

430. In regard to power—you get a very big quantity of milk per year—what power do you use?——50 h.p.

431. Is that for starting?——For starting, churning, cheese-making and butter-making. We make more cheese than butter. 90 per cent. of our milk is converted into cheese.

432. How many hours do you run your machines?——About nine hours a day for six days.

Milk, Milk Production and Milk Products.

James Glasheen.

2nd December, 1919

433. Is it a suction-gas plant?——An ordinary steam-engine.

434. What is your consumption of coal?——About four tons a week.

435. For drying milk you want more fuel?——We have to keep our boilers going just the same.

436. *James C. Dowdall.* Around about the Junction there is practically no tillage at all.——Before the Tillage Order came out, that was so.

437. A farmer tilled a half acre—simply enough for his own use?——Not even that. With regard to the Cow-Testing Associations, it would be a good thing to have public laboratories. They should be self-supporting, by the creameries sending their own tests. If there was a laboratory at Limerick Junction!

438. I quite agree. If I had to test milk occasionally, I had to send it by post, and coagulation had set in before testing. The most reliable test is before coagulation sets in.——If they were under the control of a proper Department, or something like that! That is my idea.

SECOND DAY

WEDNESDAY, DECEMBER 3rd, 1919

PRESENT :

JOHN O'NEILL, *Chairman.*
THOMAS JOHNSON, *Chairman of Food Committee.*
PROFESSOR HUGH RYAN, M.A., D.Sc., *Chairman of Power Committee.*
JAMES C. DOWDALL.
DAVID FAGAN
P. W. KENNY.
E. E. LYSAGHT.
COLONEL MAURICE MOORE, C.B.
JOHN MURPHY.
GEORGE NESBITT.
A. J. NICHOLLS.
STEPHEN M. O'MARA.
JOHN SWEETMAN.
ROGER SWEETMAN, T.D.
MRS. WYSE-POWER.

EVIDENCE OF MISS St. J. WHITTY, Secretary, The United Irishwomen.

439. *Chairman.* I understand you are Secretary of *The United Irishwomen*?——Yes.

440. You can give us some information about goats and their milk?——Yes. I feel very much honoured in giving information on the subject. I know my subject is not altogether one that finds favour with the farmer community, but I know that you will agree that the necessity of procuring milk for children is so great that it has brought the Goat Society into prominence lately. One of the principal reasons for keeping goats, is that they are easily kept, cheap to feed and house, and give a good milk yield, if properly treated and understood. In 1918 there were 218,978 female goats in Ireland, so that we have, you see, a good deal to work upon. The yield of a goat, I think, we may put at an average of about one quart a day. There have been tests in Denmark lately and, according to these averages, a goat gives a little more than a quart a day. If you take the number of goats in Ireland in 1918, with an average of a quart a day, that gives 19,925,998 gallons of milk for the year for the whole country, and you will agree that nearly 20 million gallons of milk is not to be altogether despised, especially at present, when the output of milk seems extremely scarce.

Milk, Milk Production and Milk Products.

Miss St. J. Whitty.

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The value of goat's milk is now generally admitted by the medical profession. In 1906, the Pathologist of the London County Council stated that it was "worse than skimmed milk," but the medical men refuted the statement, and proved that goats' milk is far more digestible for children, or anybody, than cow's milk, as it contains a smaller quantity of casein. The cream globules in the goat's milk are smaller and in a more perfect state of emulsion, and the curd is, therefore, softer, and more easily digested. In some of the Cresches in Alexandria, Cuba, and France, the babies drink straight from the goat, and, I think, that is the best instance of direct supply we have.

As to the use of goat's milk—the milk can be used in tea and coffee, etc., and in all ways of cooking, the same as cow's milk. Butter can be made from it. It is white in colour, but it is not of pleasing texture, though the flavour is excellent. If you put colouring matter into it, it is pleasing to look at, as well as to eat. You can, of course, make cheese from it. In France there is a considerable industry in the making of goat's milk into cheese.

441. What is the name of that?——It is called after one of the valleys in which it is made, but I have forgotten the name, for the moment. I have written to the French Board of Agriculture for statistics with regard to that cheese. It is made in the valley of the Rhone; and in Lyons, in streets they sell nothing else but this cheese. The great want at present, in town and country places, is milk for children. In the Islands of Arran we found children fed on black tea out of a bottle.

There is no doubt you could work up a very profitable industry in goat's milk cheese-making. The number of goats in the country, at the end of 1918, amounted to 277,114, that is including males, females, and kids. In 1916 the total number of goats was 293,390, and in 1917 there was a decrease in the total number for the country of 24,537. That is an enormous decrease, and although there was a slight improvement in these figures, still, at the end of 1918, there were 16,276 less goats than there had been in 1916. In looking up the statistics, to see why this terrible drop in the number of goats occurred, we find that the number of goats exported out of the country in 1915, 1916, 1917, and 1918, amounted to 25,927—a large number in three years, while the imports of goats into this country amounted to 44. I am informed, though I have no direct evidence of the fact, that the goats sent to England were sold as mutton during the war. Although the goats bought here were sold as mutton over there, I think it is very easy to distinguish between them. Goats' flesh is rather like mutton, but it has a very queer taste. Goats, if properly kept,

make excellent eating. I understand, though I have no evidence of this fact, that about 18/- a goat was got by the country people.

Where we suffer so much is, that no discrimination is made in the country between the good milking goats and the bad. Good milking goats now cost £3 to £4, and, in fact, the price might go up to £9. In England, the price of a goat runs from £7 to £40, and goats have been sold for £60, and even £100. There has been a tremendous boom in goats. It would not be a bad thing if we had a clearance in the country of goats of a bad stock. There are thousands of goats with a milk yield below the average. In Ireland there are a good many Goat Societies trying to improve the milking qualities, but we say that the quickest and only satisfactory way to improve the milking qualities of goats is by the establishment of stud goats throughout the country. We find you have to give these goats free. We make the simplest rules with regard to them, and the fees are very low.

442. By the word "we," you mean your Society?——Yes, the *Society of United Irish women.* We fixed the fees, and put them as low as it would pay to keep the goat. For cottagers, the goat-keeper is allowed to charge only 2/-; and for people above that state he will not be allowed to charge more than 3/6. We have been rather abused for bringing into this country foreign breeds. The fact is, the Irish goat has not been selected. The difficulty is, that we have no record whatever of the milking qualities of the goats in the country. We know there are excellent individual goats amongst the Irish breed, but, so far, we have not got any definite strain we can use. We have imported goats from England, but, of course, the embargo has made the difficulties very great. The dam of the sire is the most important thing in the milking qualities it can transmit. Foreign breeds have been selected for their milking qualities from Switzerland, Denmark, Belgium, and even Egypt, but we will leave out the Maltese goats altogether, for, although good milkers, they transmit disease.

443. How is the system of selection arranged?——I think it was private enterprise, but I rather think it is being done by the State in Denmark. The Danish Goat Society has taken up the matter. Goat records are kept in Switzerland, I think, mostly by private enterprise. The foreign breeds of sires are better, as they have been selected for centuries. The foreign goats will breed much earlier in the season than our Irish goats. If you can get a goat to milk in the beginning of December, and go on giving milk through the winter, you are getting a better result than you get if it kids in March or April.

We find that if you cross the foreign breed with the Irish goat you get an excellent animal, which combines the milking qualities of the former with the

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strong constitution of the latter. No doubt, the foreign goats are more delicate. Our great difficulty has been to import goats lately from anywhere in Europe—in fact, from anywhere, except England, we have not been able to get them at all. We have no quarantine stations in Ireland, and it is necessary to get them through English ports. The English Board will not let them in, except under the most severe restrictions. There are several Goat Societies in Ireland, all trying to improve the breed, and, as stated, the *United Irishwomen's Society* are doing this by sending out good sires. The difficulty is to get good sires, and the fact that the country people do not know how to treat the animals, as they have been accustomed to goats that feed on brown paper and matches. We are trying to establish a system of record keeping. That is the only way by which you can eliminate bad goats. Very often the owner of a goat does not know whether it is good or bad. We find, if you have a goat giving a smaller amount of milk for nearly eleven months, you have a much better average. The only system by which you can know whether a goat is good or bad is by keeping records.

444. *James C. Dowdall.* Your evidence is very interesting, and I see possibilities in the matter which I had not noticed before. You tell us there were 218,978 she goats in the country in 1918, and that that number of goats gave nearly 20 million gallons of milk in the year. That would be 160,000,000 pints, which works out at more than half-a-pint per head of the population per week during the whole year. What becomes of the kids, as a rule?——That is another difficulty. If the country people get the milk, they do not care about the kids. Our difficulty is to persuade them to keep good kids. I think we can do that, if we can arrange to get sale for good kids.

445. Are many kid skins exported from the country?——I am told a good trade could be done in that way, if done on a large scale.

446. My reason for asking the question was, that in some districts French buyers come over buying kid skins, and it struck me that a great many kids must be killed simply for their skins?——I have no knowledge of that.

447. In the northern portion of the Co. Cork, French buyers come over and buy skins, and I think it is rather a pity that kid skins are not made into gloves in Ireland.——That is worth following out.

448. Is your *Society* giving any attention to getting information with a view to introducing cottage industries, such as the making of this cheese which comes from Switzerland and France?——Yes, but we have not encouraged it in the matter of goats, as we thought it more essential milk should be produced

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and drunk. If, at any time, there was a surplus of goat's milk, we could encourage the making of cheese.

449. *Thomas Johnson.* At the present time they are devoting attention to goats in other countries, as well as in Ireland?——Certainly. In England the question has been taken up more seriously than it was. I am told, the Swiss people are objecting to their goats being exported, and in America they are taking up the question very much.

450. Is that for any special purpose, or simply to supplement the cow's milk supply?——To supplement the milk supply, but, of course, there are people who go in for the Shows, and make fancy prices—but it is chiefly for the milk.

451. The milk is not being used for any specific purposes, medical or otherwise?——No, but the medical faculty have found that it is very good for children.

452. In the Continental countries, have there been any special purposes for which the milk has been used?——Unfortunately, I have not had statistics from these countries. In Denmark, they are doing all they can to work up the Goat Industry, and in the Eastern side of France it is a great industry, but whether an export industry or not, I cannot find out.

453. *Professor Ryan.* It is said that the goat is not subject to tuberculosis. Is that a fact?——It is far less likely to be affected, but it is not true that it is never affected. The question came before me, and I was informed by people in this country that they have had it. I wrote to other Goat Societies on the matter, and I found that goats are liable to tuberculosis, but much less so than the cow.

454. *Father Farragher.* Would the want of male goats be supplied by getting them from different parts of the country, without going outside at all? ——Yes, if you had a proper number. We suggest that a goat should not be kept in any district more than two years. At present, there is not a sufficient stock of good goats in the country.

455. I think, a few years ago, I had a communication from a gentleman somewhere around Tipperary, where there was a Goat Show, and he seemed to think that there was an excellent breed of goats down there?——There are very good Irish goats, indeed, here and there, but they have not been selected. It is impossible to trace the good goats.

456. What time did you see, in Arran, the black tea in the bottle?——I could not give you the exact month, but it was in the winter time, when milk is very much rarer than in the summer time.

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457. *Roger Sweetman.* I take it that your experience is that the foreign goats are better milkers, because they have been bred from generation to generation for milk purposes?——Yes.

458. I think that is according to the experience our dairymen have. The very fact of breeding for milk purposes makes them more delicate in constitution, and to make them hardier, you cross them with Irish goats?——Yes.

459. You would get a slight diminution in the matter of milk, but you would get considerably more hardiness, because the goat with the long pedigree has a greater power of transmitting the actual characteristics to his progeny than the animal of short pedigree. It occurred to me that the question of feeding is an important one. Do you suppose that for the amount of milk a goat yields she is an economical animal to feed?——Of course, the country people feed goats upon the hedges, and such like, and it does not cost them anything at all.

460. *Thomas Johnson.* Do you think the number of people owning goats is less than it used to be?——I do not know that that is so. No statistics were kept 20 years ago.

461. The complaint that has been made about the destructive character of the goat is responsible for the dislike of goats ?——I am afraid that it is, but we find that where goats have been for generations domesticated, that they are not nearly so destructive as those allowed to run wild on the mountain side. People have told us that the foreign breeds are not so destructive.

462. In other words, the goat may be trained off his propensity to bark trees, by giving him proper food?——Yes, I think so.

463. *Colonel Moore.* Do you think the statistics you have given us are in anyway correct?——I have taken the figures from the Board of Agriculture Report.

464. These figures are gathered by policemen who go about and say, "I think, in that district, there may be 50 or 20 goats." The policeman does that on chance mostly, and does not see them at all?——I cannot offer an opinion on that, but I have accepted the Department of Agriculture's statistics.

465. My case is that they cannot be relied on. If there is a reduction in the number of goats, don't you think it is partly due to the work of the Congested Districts Board? Around my place there were large areas of land, partly rocks and partly shrubs, which were grazed, where the goats were turned out, and they had a certain effect in keeping the land free from graziers. They did not mind, and the owners did not care. The Congested Districts Board came along and striped this land among the people, and the goats were cleared out

altogether?——Yes, but I do not think it could reduce them by thousands in three years. In fact, we know most of the reduction was due to exportation.

466. *Chairman.* These goats are not much loss. If not milk producers, they were better cleared out.

467. *David Fagan.* Do the District Councils encourage labourers in the cottages to keep goats?——I do not know.

468. In Leinster, I suggest, there has been a great decrease in goats since the beginning of the eighties?——Well, I think Leinster is the one province in which they have been increasing. The number has increased in Leinster, even during the years of exportation.

469. In my young days I saw a great many goats in the mountain districts of Co. Dublin. They are not so numerous now. Outside Dundrum is a place called Goatstown, and the goats came down there daily to be milked, but the goats are not there now. In a mountain range you will find 13 or 14 goats, where there used to be 300. When the labourers' cottages were being built, encouragement was not given to the keeping, and goats were prohibited. In Westmeath, Kildare, Longford, and Cavan, they put their foot down upon the keeping of goats?——I think there are about 16,000 goats in Cavan.

470. *John Murphy.* Has any effort been made, by tests, through the country to find out whether the keeping of goats pays or does not pay?——No. Cards were distributed to owners, but, of course, we have got our Goat Farm in Wexford, and they have been keeping records. They have about 30 goats at the moment.

471. If you find it a profitable thing, I suppose you would be in favour of a dozen or two being kept wherever possible?——Yes. Of course, a Goat Farm is a difficult thing to manage, and it would not be possible for any individuals to keep as many as that.

472. Would it not be worth investigating what happens to the bulk of the kids early in the spring. I think people lose by the miserable price given for the skins, and the people trading in them make large profits. Might I ask your Association to interest themselves in that way?——Yes, certainly.

473. Is the trade in the export of goats of recent date?——Yes, within the last four years. In one year there were only 64, and in another a little more than 100, but, since 1915, the goats exported could be numbered in thousands.

474. Was it due to war conditions that the increased exportation took place, or that the people on the other side believed that the keeping of goats

was a useful and profitable thing?——As far as I can find out, it was due to war conditions.

475. *Colonel Moore.* You mentioned about goats being left a short time in a district. With horses, the principle acted on is exactly opposite. Thoroughbred horses are closely inbred.——It has always been said that it spoils the constitution, and makes them more liable to catch cold and pneumonia.

476. Chairman. Perhaps the explanation is that the longer the imported strain is left in a district, the more it loses its own characteristics.——We found that inbreeding deteriorates the constitution of the animal. Whether it is due to the foreign breed or not, we do not know.

477. *P. W. Kenny.* Is it your experience that goats are largely kept?——Very largely. They are certainly kept by the labourers to a large extent.

478 In the old Brehon Law, the fine for the trespass of a goat was about 3/-, present money value. This was a wooded country at that time. The trespass of a hen was put down at 2d. The system of feeding a goat in Ireland seems to be that he should make his living anyhow, but certainly not on the property of the owner. Now, in Australia, we find that inbreeding improves the instinct of sheep dogs, and makes them sharper, and with spaniels the result has been the same. In the matter of goats, the question is, whether it would increase their milking qualities or not?——I have heard it does not impair their milking qualities, but it does their constitution.

479. *Chairman.* You mentioned black tea in Arran Islands. Have you any idea of what happens in mountainous districts with regard to the feeding of children. Is it not a fact that the goat owners in these districts feed their children on black tea, and dispose of the milk?——I do not know.

480. I am told it is so, and is there not that danger if you develop a profitable industry in goat's milk?——You have to take great care that you do not get fictitious prices. If the prices are raised too high, they will sell.

481. A good many people have a fancy for goat's milk for tea. They say it is as good as cream. If people are producing a very valuable thing, they will sell it, sooner than use it?——In that case, the difficulty of transport comes in. The owner is generally a labourer, a poor man, and it is not easy for him to transport his milk.

482. Where people have a number of servants, they may send one for the milk. Does it not happen that they buy goat's milk from the labourers' cottages?——In Bray they do, but that is a thing you can put no limit upon. You must produce the milk, as long as it is not sent out of the country. You can get no more than the production.

483. But you are using your funds for the purpose of benefitting the children of the poorer classes, and if that suddenly develops into a profitable industry the practice would not be justifiable.——I think that is going in a vicious circle. If you thought that, you would not produce more of anything. You see, we do not help them to sell. We only help them to produce a good goat. We have nothing to do with the marketing.

484. *Professor Ryan.* Don't they get a higher price for goat's milk than for cow's milk?——Yes, in Bray.

485. And there is no disadvantage in selling it, if they get a higher price, and buy cow's milk?——No.

EVIDENCE OF DAVID HOUSTON, Consultant on Agricultural Bacteriology to the Irish Agricultural Organisation Society.

486. *Chairman.* You are Consultant on Agricultural Bacteriology to the I.A.O.S.?——Yes.

487. Would you prefer to make a statement in your own form?——I understand I'm here simply to answer questions.

488 *James C. Dowdall.* Some questions arose yesterday, on which they said you would enlighten us, perhaps, more than anybody else. Are you in favour of Pasteurizing milk in cities?——That depends entirely on the quality of the milk. If the milk is bacteriologically pure, and it is kept cool (say anything about a temperature of 45° F., or so), the milk will keep quite well, and need not be Pasteurized. May I explain why? Why do you Pasteurize? It is not to effect the milk chemically, but to destroy any bacteria that may have reached the milk from careless milking. If bacteria are not there, then why Pasteurize? There is no virtue in Pasteurizing, other than for the purpose mentioned. There is a dairying company in Copenhagen that follows that plan. Personally, I would prefer to use fresh, pure, sweet, clean milk unheated, to milk Pasteurized.

489. I am very pleased to hear you say so. Would you recommend limiting the temperature for milk to be vended in cities?——Most certainly.

490. What temperature would you fix above which milk should not be vended in cities?——Well, one might set a standard, but you have to take into consideration whether that can be reached. You see, there is no use

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in milk being sent to a city at any haphazard temperature, and then to cool it down at the City Depot before delivery. The harm is done. If you possibly can, a standard temperature ought to be fixed, but it ought to apply to the delivery period as well as the period of distribution.

491. Am I right in saying, with regard to milk vended in New York, that if it is not below a certain temperature, it is not allowed to be sold ?——Yes. The reason is that temperature is the only way to keep down acidity. The higher the temperature, within certain limits, the more rapidly do the acid-forming germs reproduce themselves.

492. Are you in favour of cold-storing milk in cities, in case the milk supply was organised. They say the great difficulty is irregularity of arrival, and, in certain instances, they might have to keep over in cold-storage for 48 hours?——May I answer that by explaining what is done in Belfast. A number of Co-operative Creameries around Belfast have agreed to send into the city pure milk every day. They supply some thousands of families. An effort is made to see that the milk delivered by the farmers to the creamery does not exceed a certain acidity. I was consulted, and the standard I suggested was .2 per cent. acidity. I also recommended that the milk be run through a clarifyer. It goes in milk and comes out milk, but impurities are to a large extent, eliminated. It is then Pasteurized, and immediately after Pasteurization it is chilled down to a low temperature, 44° F. is aimed at. The milk is sent to Belfast, and if not wanted immediately, it is put into a cold-store. I have examined such cold-stored milk at the Belfast retailing shop, and found it quite sound.

493 The men at the head of the system you mentioned in Copenhagen are dead against Pasteurization ?——I know, but against that, there is also another company, in the same city, in favour of Pasteurization.

494. Does Pasteurization of the milk tend to hide decomposition?——No. It stops, of course, the formation of lactic acid, and hence souring, and, in that way, of course, it may "hide," by disarming suspicion.

495. Suppose you store the milk, and the temperature of the cold-store varies, and the milk begins to decompose, would Pasteurization to any extent hide that?——I do not think so. I think the more important result is this, that it is a great safety to the public against a possible infection from diseased udders, milkers who carry disease, and like risks, to have the milk delivered Pasteurized.

496. Have you any experience of milking machines?——No personal experience, but I have seen them work.

497. Do you think that if small traces of the milk casein stick in the tubes, it would be harmful?——I think that if anything of a fermentable nature is allowed to remain inside the tubes it would be harmful.

498. Have you seen any instances arising where this system of milking has had an injurious result?——Yes, when the apparatus is not attended to properly, and if the work is done by careless men, it is open to the gravest condemnation.

499. *Chairman.* If these machines are cleaned in the manner in which they should be cleaned, what would the ultimate saving in labour be?——I am sorry I cannot tell you, but I was speaking to a New Zealand dairyman the other day, and I asked a question similar to what you asked now. He said that the machine must be a proper machine, and that instead of the clips pulling together, they should imitate nature by alternate sucking, and, if kept clean, and the machine is of a perfect type, they say they save a great deal of labour and expense.

500. *James C. Dowdall.* Do you know how the yield of milk, per cow, is affected by this system of milking?——I have no knowledge of that.

501. In New Zealand and Australia milking machines are largely used, and the milk yield is rather smaller where they are used?——They say if the machine is unable to strip the cow, that would follow.

502. The stripping should be done by hand afterwards?——Probably, but it is a great saving of labour.

503. The stripping takes only a few minutes?——Yes.

504. We heard something this morning about goat's milk. Miss Whitty told us the globules of fat were smaller in goat's milk than in cow's milk?——Yes, they are smaller, and more uniform, but I do not quite see the point you have in your mind.

505. Would that make the milk more digestible?——If the globules are large they would come to the surface quicker, and in the skimming you get poorer skim milk from the larger globules. Goat's milk does not cream well, as the fat is better distributed.

506. It is only with regard to digestibility, I ask?——I can give no personal testimony on the point. I know it is claimed for goat's milk that it is easier of digestion, but I cannot imagine that the comparative largeness of the globules in cow's milk interferes with their absorption.

507. Would the small globules tend to make the curd softer?——Theoretically, I think so, but practically, I wonder.

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508. Cheese has been largely made in the creameries within the last twelve months or two years. In some cases, they have difficulty in getting rid of the whey. They have run it through a separator to get better butter from it. Would any change take place in the composition of fat during the process of cheese-making?——No change would take place in the fat itself by its mechanical separation.

509. Chemically, butter made from whey would be pure butter?——Certainly. So far as the fat itself is concerned.

510. I believe you made some investigations in Dry Milk?——As to quality; yes.

511. Of course, Dried Milk is sterilised?——Well, it is Pasteurized. No Dried Milk is sterile—I mean, the heat used either in Pasteurizing or in Dried Milk will only kill the non-sporing germs.

512. Am I right in saying the spores are rather beneficial than otherwise?——In milk, so far as my experience goes, the reverse is true.

513. Have you any experience as to the diatetic value of dried milk?——No. In such matters, I only know, either by talking to physicians or by studying the physiological researches that have been made on the subject.

514. Have you followed these to some extent?——Yes.

515. What deductions have you drawn from them as a food?——From well dried milk, when reconstituted, you can get practically all that is required of ordinary milk. I have examined all the Dried Milks in the market. There are two processes. One is by a roller process, and the other by a spraying process. In my opinion, the spraying process is the better of the two, by far. I find that, in physical constitution and taste, it is a true food milk. It is manufactured in Somerset, and makes a perfect emulsion. Under the microscope, it presents the same appearance as Pasteurized natural milk. The roller process, which is the one in general use in these islands, and in New Zealand, does not make that perfect emulsion, and, under the microscope, you can see the casein in the form of chunks, as it were; and in submitting it to centrifugal action you get a heavy deposit at the bottom of many samples. Also, when reconstituted, the fat often runs into clots, and is greasy, and floats on the surface; but that is not so in the case of the well-dried milks.

516. With regard to that, I had some experience, many years ago, of rich milk made on the roller principle. All that time I sold this Dried Milk to confectioners—it had not come into use then as milk—and they rather objected to that fattiness you speak of. In Dried Milks, which contain a large percentage of fat, is there a tendency for the fat to decompose?——Yes. The usual cause

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is rancidity. Fat is one of the most stable compounds we have, but light and air, and certain metallic oxides, will, either alone or working together, combine to break up fat molecules, and liberate butyric acid. It is that that causes rancidity. Now, if the milk is passed, either through a pipe, tube or separator, either oxide of copper or iron, even in minute quantities—mere traces of these—will cause, at least, partial rancidity of the fat, whether in butter, cheese or dried milk. That is usually put down to the action of the bacteria. There is certainly a bacterium that does that work, but one rarely finds it.

517. It is mostly due to metallic oxide?——Yes, so I believe—at least, in our butter-making creameries.

518. You sometimes see specky butter—butter with white specks—is that due to the exposure of the cream to the sunlight?——It depends. Any butter exposed to sunlight for some time will become rancid. It is bad to keep any butter or dried milk exposed to air or light, but there are other reasons for whiteness or spottiness.

519. Apart from these drawbacks, Dried Milk is a thoroughly good food, in case cow's milk is not available?——Quite. It is cow's milk, with a large percentage of the water driven off, and I believe it to be a satisfactory substitute.

520. *Thomas Johnson.* Is it essential that the milk should be fresh before drying?——Most certainly, it is one of the most important things to secure. If you propose to encourage a Dried Milk trade, the first thing is to get pure, sweet milk delivered.

521. The system adopted in this country is that if there is a surplus of milk, it is turned into butter or cheese. It would not do to use the surplus for making Dried Milk ?——That depends entirely upon the character of the milk available. Second grade Dried Milk would do for confectioners and bakers. There is a large amount used in that way, and there is a company in this city that gives orders for two or three tons of Dried Milk at a time for use in chocolate-making.

522. Do you know whether the saving of carriage would be counterbalanced by the cost of production, and whether there is any possibility that by re-liquifying the Dried Milk there would be a cheaper milk in cities ?——I do not know anything about that. It might depend on the distance upon which the carriage would have to be paid, railway rates, and so on, but I have no experience of the business side.

523. Take the price of milk in Dublin at the present time; the difference between farmers' price and the retailers' is about 1/6 a gallon. If there was

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a chance of saving 6d. a gallon, it would be considerable?——I can only say that there is a considerable outlay in the initial cost of putting in the plant. The actual process, however, does not take long. I do not know exactly what the cost of the plant would be. The variety of plant I should like to see introduced into Ireland is that for the spraying process, and the patent owners are demanding a heavy royalty of thousands of pounds for that.

524. Where is this manufactured?——The holders of the patent are Americans, and they have sold the patent rights for the British Isles to a London company, and if we want to use it here we would have to get their permission, and pay them for the right of using it.

555. In the main, you advocate Dried Milk?——Personally, I think it has all the necessary qualities, with the added advantage that, in summer, in places where there is an abundance of milk, this milk could be dried and stored. Something must be done, either in that way or some other way, in this country, because one finds there are whole districts where children are unable to be supplied with milk. Experimental work has shown that milk contains fat-soluble vitamines. Food containing such vitamines is absolutely essential for children, and all young animals, as without their help no growth, other than abnormal, will be made. We have seen experiments with ducklings, and know of experiments with domesticated animals, in which it was shown that even the most well-balanced ration did not produce healthy growth in the absence of vitamines. For example, a batch of white rats were taken, after weaning, and for a time fed on as much grain as they would eat, together with water and lime salts. Then they were divided into groups. Some were given milk as an addition to the grain, others olive oil or margarine, and some confined to grain only. Now, I have not seen the actual animals, but I have seen photographs of them. The animals that were fed on grain only were poor, miserable things, almost dying, and, in fact, one of them did die. The one that was fed on milk flourished exceedingly. Olive oil was of very little use, and margarine was of very little use, but butter was. There are no vitamines in margarine. In milk there are abundant vitamines, and if our children are not to be supplied with this growth-determining food, as milk or eggs, or both combined, we will be physically a degenerate race.

526. You think it is the duty of any authority that might have the power in this country to so regulate affairs that a sufficient supply of the food—that is, food containing vitamines, should be retained in this country?——Certainly. I may say that the men who are working at Madison, Wis., U.S.A., on this

special subject, assure us that in the case of Dried Milk the vitamines are not destroyed.

527. Is there any record of any other foods that contain these vitamines? ——So far as the fat-soluble vitamines are concerned, they are present in the fat of meat.

528. Does pork fat contain them?——Yes, but not when rendered into lard.

529. Does your experience lead you to believe that there should be a central control over distribution?——Most certainly. I think it is a public duty for those who have charge of the health of the city to see that milk is available in sufficient abundance, and that it is pure.

530. Do you think it would be better to have definite Municipalisation of supply, as to collection and distribution, or to have it done by some voluntary organisation, or leave it to the present producers and purveyors with control? ——Well, I do not know. Personally, I would think it is the duty of the Municipal authority to see that the milk is right. If they won't do that, you cannot enforce anything. They can recommend, but they cannot enforce. In Boston they won't admit any milk for sale into the city that contains more than about 200,000 germs per c.c., but they admit into Dublin milk that contains 16,000,000 germs per c.c. In fact, there is little notice taken at all of the purity of milk in this city, except as regards the addition of water, but the addition of water is the least harmful impurity that could be added to milk.

531. Have you formed any conclusion as to whether purer milk comes from the big farm or from the small?——It all depends on the individual supplier. It is possible to produce clean milk, if the people have clean instincts—if they have clean hands, and keep the cow clean, and use sterile pails and containers. The method practised in the country is often unseemly, and occasionally it is simply appalling. There is little appreciation of the harmfulness of dirt impurities among milkers, and hardly any washing of hands before beginning operations. It is not so long since I made an early morning call. They commenced milking with wet hands, and, in one case, the accumulated grime was slowly oozing out between the fingers during the whole period of milking. At the finish, the mud was collected in a mass at the back of the milker's hands, owing to the solid matter working its way around, while in the meantime splashes were constantly dropping into the milk pail.

532. In Belfast do they practise the formation of Farmers' Societies for the supply of milk?——The farmers send in the milk to the creameries, and

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the creameries combine to send it to the one station. They Pasteurize at the creamery.

533. What is the method of distribution from the Central Station?——As far as I could see, the people just came there for their milk. My function ended at the Depot.

534. *Chairman.* In the evidence yesterday, it was suggested that the proper way to deal with this Dried Milk would be to make it in the bulk in the creameries, and have it packed in smaller vessels elsewhere. They wanted to sell it in bulk, and not in smaller quantities.——That is quite possible. According to my experience with samples of Dried Milk, it is during this packing that a great deal of re-contamination takes place, especially as regards mould spores, although the mould spores will not grow in Dried Milk, so long as it is kept dry. It is very important that this Dried Milk should be always kept under cover, and not exposed to the air, and that in the packing of it into small parcels, from the bulk, it ought to be done in a room that is perfectly clean, and with clean air.

535. Then it should be done in the creamery, to get the perfect Dried Milk. The mere fact of packing it into a large container, and sending it away from the creamery to be done up elsewhere, would render it liable to admixture. ——I quite agree that the quicker it is done the better, but, wherever it is done, it should be done carefully.

536. It would minimise the risk. The perfect way would be to have it packed in the manufacturer's place?——Of course, if packed in large bulk, there would be less risk, though if it is sealed down, and not exposed to air when conveyed to the city, and if there is a clean room to do it in, it could be done quite as quickly as in a creamery.

537. It would necessitate a special department, where it would be carefully done.——Yes, if it was not possible to do it at the creamery. The essentials are, keeping it free from dust and contaminations.

538. It would not make any reduction on the cost to the consumer ultimately ?——I should say not.

539. In fact, it would make increased cost, if the packing was done elsewhere?——Well, it looks like it.

540. *Professor Ryan.* The whole question of contamination is a question of bacteria. If dirt gets into milk, and it contains no bacteria, no harm is done?——It will produce no fermentative effect in the milk.

541. If you get milk under the best possible conditions, but if it comes from a tuberculous cow, that milk would be dangerous?——Yes, especially if the seat of the disease was in the udder.

542. The only real guarantee we have of pure milk is to see that every cow in the herd is free from tubercle.——The general practice seems to be to test the milk in cities for tuberculosis, when it reaches the city. I think that is an entirely wrong method, because it is very difficult to find the germ of tuberculosis in milk, and certainly can only be secured by feeding animals with the milk, and waiting to see the result. In my opinion, the only safety we have from the tuberculosis is veterinary inspection, as you suggest. The milk supplied as food for infants should be subject to that test. The veterinary surgeon could tell whether the cow has tuberculosis or not. If the lungs are affected, it does not follow the milk will be affected, but it would, if the disease was located in the udders.

543. It is better to avoid such a cow, in any case?——Certainly.

544. In case there is no veterinary inspection of a herd, the introduction of hygienic methods minimises risks?——Yes, the bacillus of tuberculosis is not a spore-producing germ. It might be, and likely is, killed at the temperature of Pasteurization.

545. What is the temperature of Pasteurization?——That depends upon the method adopted. There are two ways of Pasteurizing. The efficiency of Pasteurization depends upon two things—temperature and time. By increasing the temperature you can Pasteurize in a shorter time. By extending the time, you can Pasteurize at a lower temperature. For butter-making, the Pasteurization is about 185° Fahrenheit. The work is done by the Flash Method. In a creamery, that is the only type of machinery available for Pasteurization. The other method, and the one I prefer for milk for children, would be having large Pasteurizing tanks, where the milk is raised to 145° F., or better, 150° Fahrenheit, and the milk held at that temperature for 15 or 20 minutes, and then cooled down suddenly. After such Pasteurization the milk will not taste as if it had been boiled. There will be no apparent alteration made in the milk; it will have a cleaner smell and taste, and it loses the cowy smell and flavour. By this method you can, in 20 minutes, kill the bacteria as effectually as by the Flash Method at 185° F., and, in my judgment, produce a better food for infants.

546. With regard to the vitamines, we regard them as enzymes?——There is this difference: you can tell whether enzymes are present or not by

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simple tests; but I know of no test for the presence of vitamines in a food, short of feeding tests with young animals.

547. If you take vitamines, at the moment, as being enzymes, the higher temperature of 85° centigrade, 185° F., would destroy most of the vitamines ?——I would not go so far as that, as I do not know. Men, on whom I place great reliance, inform me that the vitamines are still alive in Pasteurized milk.

548. Are you satisfied that the vitamines are there or not?——Well, I have experimented a little myself with ducklings, and have photographs of animals subjected to the test, by other experimenters. I accept the evidence as absolutely convincing. I know the experimenters.

549. Cold-storage decreases the speed of the re-action, if the bacteria were there originally?——Yes, it either arrests or slows down the development.

550. Unless it is kept in air-tight tins and dried thoroughly, it may become contaminated ?——Yes. It is quite true that Dried Milk is not a possible medium for the growth of bacteria. Bacteria will not easily grow, even in condensed milk. I know of only one organism, a special yeast, that acts harmfully in such milk.

551. With regard to Dried Milk, if you make it into fresh milk, after sterilisation it will not decompose so rapidly as if it had not been sterilised ?——I do not quite follow.

552. If you add water, that milk will keep longer than fresh milk?——It depends entirely on the bacteriological condition of the Dried Milk. There is no similarity in dried milks in this respect. On reconstitution, and left standing, there are differences as wide as natural milk. The answer, in short, is what the milk becomes, and the speed of the becoming, depends upon the bacteriology of the milk, natural or reconstituted.

553. My point is, that if you have samples, one converted into Dried Milk and one not, the one not converted into Dried Milk would contain more bacteria, and would not last so long.——There would, of course, be a quicker souring, and if that is your standard, it would not last so long. Still, I do not clearly see your point, because souring is the least harmful of the changes that may take place, especially in Pasteurized milk.

554. One witness said yesterday that Dried Milk, when converted into fresh milk, kept better?——I should say yes, and no.

555. That is not important, if the milk is converted only just as you want to use it.——I quite agree. The instructions are always to make the milk as you require it, for infant feeding. If any is left over, it should be thrown

away, or used for some other purpose, but it should not be used for feeding again.

556. *Professor Ryan* With regard to rancidity, we generally hold that rancidity is due to decomposition of esters?——Rancidity might be due to the growth of the milk fungus Oidium lactic, or to the presence of certain metallic oxides, or to light.

557. Apart from that, copper oxide is insoluble in water, and could not act?——Experiments have been carried on in this work for the United States Government, and what I have stated is their explanation.

558. Have they tried the addition of copper oxide to sterilised butter?——I cannot tell you.

559. If you had copper oxide combined with an acid?——What are the usual metals in a creamery?——It would not be copper.

560. *James C. Dowdall.* They seem to be galvanised pipes, as a rule. Zinc metals are not soluble in milk. It is a very well known thing that when a new creamery is started, and hot water is run through the separators, so as to clean them, and when you proceed to run milk for the first few days, you get a distinct metallic taste off the butter and milk.

561. *Professor Ryan* That is due to the acidity of the milk—I know a little about margarine and fats, and the effects of metals, I take it. It is possible for us to agree.

562. *James C. Dowdall.* If I put fat into a tank, specially prepared for it, and left it in three or four days, you will see a distinct discolouration.

563. *Professor Ryan* The fat is not pure fat. We generally assume that Casein present is a combination of calcium phosphate?——Yes.

564. Could you tell us whether breeding to increase the quantity of milk is the same thing as breeding for increasing the quality of milk, as regards fat?——I have no experience of this I merely speak from physiological knowledge. I think you can breed for either, but not for both at the same time.

565. Do you know anything with regard to beetroot for increasing the quantity and decreasing the quality of milk?——I have heard of that, but have no experience regarding it.

566. *Chairman.* Have not mangolds the same effect?——So I am told.

567. They produce a bigger flow and poorer quality?——Yes.

568. *Father Farragher.* Does the boiling of milk deteriorate its qualities for butter production?——The bulk of medical opinion says no. Dr. Lane Clayton, who is Chief Medical Authority in connection with Infant Welfare

Section of the Board of Health, England, says, definitely, no. She has investigated the whole matter.

569. About tubercular cattle in the country places, would it not be advisable to have an inspection occasionally?——I think so, if the milk is to be used for children.

570. *Colonel Moore.* Would you attribute the physical state of the people in big cities, like Belfast, to the small quantity, or bad quality, of the milk used. If you were inspecting recruits, or volunteers, and went from the South or West of Ireland to Belfast, there is a striking difference in the appearance and physique of the men?——Of course, in such a case, one can only have opinions. I am strongly of opinion that a great deal of the physical defects one sees among the poorer city children especially, are due to malnutrition when young. They have not had enough milk. It is amazing the influence milk will have on any growing creatures, either among human beings or domesticated animals. I have noticed it especially with ducklings and pullets, and with kittens. During the period of growth, milk or egg has a wonderful effect. You do not want much. You need not, of course, feed them entirely on these things, but the use of either, or both, makes all the difference in the world to their growth. The lack of milk for growing children is the source of a great many of the physical defects lamentably common to childhood. There is no other thing known to physiologists that can take the place of milk for the young child. There is no real substitute for it during growth, while during the period of lactation there is no possible substitute for it. Yet, one is told there are large numbers of children that are not only defrauded of the natural milk food, but that even milk, of any sort, is miserably withheld from them. Moreover, milk is required throughout the whole period of child life. It is strange how the old country food of bread and milk turns out to be the very best possible food for a young family.

571. Are you a student of breeding? As far as cattle, I mean?——No, any work in breeding I have touched, has been done with plants.

572. *P. W. Kenny.* Do you know of any brand of Irish Dried Milk?——Yes, one. I only know of one place in Ireland where they are making it—Waterford—and good Dried Milk it is, judging from the samples I have analysed.

573. From the Spraying Process?——No, the Roller Process, I should judge from the samples examined.

574. Could it be used for all purposes of milk?——I would not, myself, prefer Dried Milk for use in tea. For coffee it is excellent, and for cocoa you could not have anything better

575. Do you know anything of the price?——The price varies. I have not gone into that, but I should say that it ought to be as cheap, if it was made in Ireland, as fresh milk.

576. Now, as to that shocking experience of yours in the morning visit, I may say I had a similar experience to that. I do not know what is the origin of people moistening their hands when milking. It may be thought to influence the maternal instinct, by trying to bring about similar conditions to a calf suckling the cow. Do you think that by arousing the maternal instinct it would give a freer flow of milk?——I do not know, but I would chance the dry-hand milking, for the sake of securing a cleaner milk. I have been talking to milkers on this very question. They say you can bring all the effects you want on the nervous system of the cows by dry hands, and better, and there is no comparison, from the hygienic point of view, between the two. The wet method is a very serious source of contamination.

577. *David Fagan* Do you consider the City Analyst should look for other adulterations in milk, besides water?——They look for added preservatives, like boric acid, and things of that kind.

578. I saw, by the London County Council's Returns, that they very often find boric acid in the milk. They find, when there is over a grain per gallon added, it is dangerous?——I can only speak from what the medical faculty tell us, and the result of experiments. It seems, boric acid is not a safe thing to swallow. It appears also to be harmful to some, and less harmful to others. It is not excreted, and, therefore, is cumulative in the system. I remember an experiment, carried out at an American College, where a number of students submitted to feeding tests with this boric acid. In some cases there was no evident effect, and in other cases there were very serious effects. In food for infants, boric acid is highly dangerous, and it is not allowed by the English Board of Health in milk sold for infant feeding. If it is contained in bottled milk, it must be stated on the label, and, further, it must be stated that the milk is not fit for infant feeding.

579. You consider that there is no proper system of inspection of cow-sheds?——All over Ireland there are arrangements. The law is all right, but all enquiries I have made go to show that the inspection is simply no use. It is a dead letter.

580. *P. W. Kenny.* The cow-shed and dairy regulations are such that it enables an inspector to visit one cow-house per month, and he reports each month. A man, whom I questioned on the subject, said that the allowance given him did not permit him to give efficient service, and the system of perfec-

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tion is perfunctory?——That is my experience throughout the whole rural districts of the country.

581. *Chairman.* Yesterday, we were informed that the system of female milkers is dying out, and the male labourers are replacing them. Would not that have a big effect on the cleanliness?——So far as my limited observation is concerned, I would say so, certainly.

582. And a reversion to the old system is advisable ?——Yes.

583. *James C. Dowdall.* Are there vitamines in roast beef?——In the fatty part, yes.

584. You told us there were not vitamines in margarine?——Yes.

585. As a matter of fact, exhaustive experiments have been made, and it was found that the American oleo margarine contained vitamines.

556. *Thomas Johnson.* In what place would you put separated or skim milk, in regard to food?——In skimmed milk, you have all the constituents, with the exception of a much smaller quantity of fat.

587. You do not condemn, but rather approve of it, within limits?——Certainly.

589. There is a very large quantity of buttermilk taken by the people of Belfast—every family practically takes buttermilk. That is made possible by the method of home churning of milk in the country. There are scarcely any creameries within twenty or thirty miles of Belfast. Have you any knowledge of the relative merits, from a food point, of that method, as compared with the other?——The only method I know of is that adopted by the Associated Creameries in Belfast. They make their butter in this way. It is really not buttermilk, but skimmed milk, to which a lactic starter has been added to make it sour. Buttermilk obtained from churning whole milk is quite different from buttermilk derived from churning separated cream. The buttermilk made from separated milk is a wholesome, pleasing and nutritious drink. A large number of people, especially in these "dry" times, want something to drink. They would drink buttermilk readily, if they could get it. It is most wholesome. The lactic acid formed in the intestines keeps back decomposition, and it corrects the passage of food through the bowels. Motchinoff held that by persistently drinking buttermilk he could extend his years, and make them pleasant. If I did not drink my glass of buttermilk so frequently at the laboratory, I do not think I could have the same grade of health as I enjoy. In the United States this prepared buttermilk has become quite a national beverage. in those States where the licensing laws have suppressed drinking, I know of half-a-dozen big breweries that have now changed into buttermilk factories,

with great advantage to the community. I submit, gentlemen, that is a thing you might consider. In some parts of the country, at times, they do not know what to do with the excess of skimmed milk they have got, but nothing could be better as a drink for adults.

590. The fact that Belfast is so healthy is that there is a very large quantity of buttermilk taken in the working-class houses. Do you know anything of the scald method of making buttermilk?——I have seen it. I do not think it has any particular advantage.

591. Separated milk contains vitamines?——Yes.

592. You spoke of the Tuberculin test. Is it recognised authoritatively by those who ought to know that it is a genuine, reliable test?——I have, on that point, spoken to Professor Mason, who is one of the best known veterinary authorities in Ireland, and he tells me that the test, when properly carried out, may certainly be depended upon.

593. If people knew the inspector was going around, and they injected Tuberculin, the reaction would not take place?——It is not a scientific man you would want in such a case, but a policeman.

594. While boric acid is, from the medical point of view, a drawback, it increases the bulk?——If there is any boric acid in my cream, I can tell you two hours afterwards I had boric acid.

595. I know some people who are strong advocates of it?——I am not surprised.

596. Why are preservatives added to butter?——To preserve the butter against the action of included dirt bacteria. My laboratory formula is—find preservatives, suspect dirt

597. You might apply that equally with regard to salt.——The best butter I ever handled was butter that was as close as possible to pure butter fat, that is made from cream as rapidly after milking as possible—milked under the cleanest possible conditions, and churned right away, with no salt added, nothing added. That butter will keep as long as you like, if put in cold-storage. In fact, that is the specification of the American Navy butter, which is packed in tins, and used by the Navy. It will go around the seven seas and back again without any alteration in taste or flavour. Butter fat is the most staple food we have. It is not its fault if it decomposes. It is one's own fault. It is the fault of the people who make the butter. The milk is subject

to contamination all along the line. It is not drawn half a second from the cow when it is subject to contamination from dirty hands, clothing, cans and air. Then it goes to the creamery, and if you have a badly kept creamery, it is subject to other contaminations. You know, as a butter merchant, that the stuff will not keep, and you dose it with preservatives, and keep all these organisms in abeyance, with entire disregard as to who is to eat it.

598. You say milk is subject to decomposition from the moment it is milked until it is made into butter. No human agency exists that can control everything that may tend to the deterioration of the milk. I quite agree that butter should be produced under hygienic conditions, but the difficulty is in the controlling of the conditions. Decomposition sets up in butter when it comes to the traders' hands.——Why do we Pasteurize? Because milk is dirty, that is, it contains the germs peculiar to dirt. Why do you add salt? For the same reason. Cold-storage? The same reason. Now, just to illustrate. I was in a creamery, and I asked, when the milk was delivered, did they strain it, and the answer was. Yes. I asked, where was the strainer? I went up the ladder (as the strainer was elevated) and looked into the strainer, and I found it rather dirty, and with a big hole in it, and yet the manager went religiously through the process of straining, and believing, I suppose, that he was straining, and yet not straining, and a great many go through, in the same way, the process of Pasteurization.

599. *Colonel Moore.* I do not know if you know anything about a system I met out at the Cape, South Africa. It was the custom all through that they would not drink fresh milk at all. They laughed at me, for a fool, when I drank fresh milk. They had large crocks, and they put their milk into them until it soured, and they never changed it for long periods. They continually added to it, and they continually drank the sour milk. Can you tell us anything about that, and as to whether it is an advisable system?——No, and for this reason: If there was a vessel there, and kept open, and everyone going and taking from it, and that sort of thing, and then fresh supplies added, the milk is subject to considerable bacterial contamination, and just what will take place will depend upon the character of the bacteria and moulds, and yeasts that find an entry. The best way is to keep a little buttermilk in a small vessel. Keep it away from dust, and use it to inoculate, every time, the fresh milk kept in the larger vessel. I would make a fresh souring every time, but, perhaps, the natives like best the product of their own method. It is a matter of taste.

EVIDENCE OF EDMOND FARRELL, Manager, Tourmafulla Creamery.

600. *Chairman.* Mr Farrell, would you prefer to make a statement? ——Yes. As regards increasing the milk supply, I consider that the first thing to do is to destroy the cur breed of bull. In my opinion, the Department of Agriculture have done some useful work in increasing the milk yield, but they have begun at the wrong end. They have attacked the evil, but have left the cause severely alone. They have brought a Cow-Testing Inspector into our district, but there was one thing he did not do, and that was to shoot the cur bulls. I know no less than 20 cur bulls, and, in the same district, I know only one Inspector of Cow-Testing Associations, and, I am confident, that the damage done to the milk yield of the district, by even one cur bull, would more than counter-balance the good done by the Inspector, and an Inspector costs anything up to £500 yearly. The remedy is quite plain, and that is to shoot every cur bull in the country, and the milk yield would be easily increased afterwards.

Now, having a milk yield of not less than 650 gallons per cow, per annum, and by adding four strings to the dairy bow, that is by introducing condensed and powdered milk, in addition to butter and cheese making, dairying, I am convinced, would become so profitable a business that no farmer, large or small, would think of giving it up. If it is proved to be even slightly more profitable than cattle raising, then it would be up to every Irishman to encourage it in preference to cattle raising, because, I contend, that dairying carries very much more of a population than the cattle business can carry, and the maintaining of the population of the country should be our first aim. I am out of sympathy with cattle raising, because, where the bullock takes the land, the man has got to take the road, and in Ireland we want to hold the men and let the bullocks go.

The introduction of cheese, and dried and condensed milk manufacture, would be likely to lead to a scarcity of young cattle in the country. This argument was used against us in Limerick when we started cheese-making, and we answered it by advising every farmer to rear sufficient calves to repair the wastage in his own dairy cattle, but not, on any account, to rear surplus calves which would, later on, be used to cattle the lands of the Irish rancher and English grazier. The result of this was that the farmer raised sufficient calves for his own needs, and sold the balance, very many of which were slaughtered and consumed locally—in fact, veal became so plentiful in the district, from first of March to the end of June, that I have seen children carry veal sand-

wiches for their lunch to school. Of course, butter-making only, which, in my opinion, was too much talked about, offered great facilities for calf-rearing, and one of the reasons why the Englishman encouraged Irish butter-making was, that it meant, not only having butter to export, but that it also compelled us to have plenty of stores to export. Those stores carried with them a lot of employment out of the country, and, I say, a form of dairying should be introduced in Ireland which would offer the least opportunity of sending employment out of the country. That form is cheese, condensed and dried milk, and I see in these three products the opportunity of extending to the silent grass ranches of Meath, and elsewhere, the same hum of industry which prevails in districts where dairying makes a plentiful population possible.

601. *James C. Dowdall.* You are in favour then, Mr. Farrell, of a full cycle of dairying?——Yes.

602. Up to one year ago the creameries, I think, simply made butter?——Yes, almost only butter.

603. Cheese-making has now been introduced fairly largely ?——Yes, but it is practically confined to the South.

604. Of course, the principal dairying districts are in the South. Where is your district?——Close to Newcastle-West, on the Kerry side, about four miles from Athea.

605. For how long have you made cheese, and what is your experience of cheese made in the creamery, so far as regards quality?——Two years ago, when we first started cheese-making, I do not say we were very competent, but, at the present time, I say we can make Irish Cheddar cheese which will compare with any English cheese.

606. I quite agree with you, as I have seen it, but unfortunately a great many creameries made very bad cheese. Can you assign a reason for that? ——When we first started we had not the experience.

607. Has it come to your knowledge that some of the creamery men added considerable quantities of separated milk to the new milk?——The Caerphilly cheese is made with a mixture.

608. Did they add a considerable quantity of separated milk?——Not to my knowledge.

609. Have you made any enquiries as to the cost of the plant for Dried Milk ?——I have made some enquiries. The original cost would be something considerable, but, I think, the reward at stake would more than compensate for the original outlay of installing the plant.

610. In view of the estimate you have made of that cost, have you had an opportunity of figuring out what the cost of the production of dried milk would be ?——I have not gone into it minutely, but I take it big creamery proprietary firms were not making a business mistake when they entered into the making of Dried Milk. I take it there is an extra reward in it, although there is heavy expense.

611. In the programme you have outlined, there would be an extremely large production of milk, and that increase you would bring about, first, by shooting the cur bull; and secondly, by the extension of dairying. There would be a very large surplus of milk, even after making butter. Do you know if skimmed milk is condensed?——Yes.

612. You would use that skimmed milk for purposes such as making milk chocolate?——Quite so. My object is to have as many strings as possible to the dairying bow, so that if one does not pay, another will.

613. Since you started cheese-making, do you find it easier to cover your working expenses, and have a surplus over than before?——Yes.

614. Both by Cow-Testing and better bulls, you would increase the yield of milk almost automatically, and, after increasing the yield of milk, apart altogether from the profits of the farmer, there would be a further supply available for the poor people around the district, and, if necessary, would have a supply of milk for cities like Dublin?——I want to make it plain, I do not want to interfere with the whole milk. I want to have a sufficient supply of whole milk.

615. That would only follow by having good bulls and Cow-Testing?——I think so.

616. Cow-Testing is comparatively new?——Some six years.

617. Are there Cow-Testing experiments carried on in your district?——Yes.

618. But, you say the Cow-Tests are nullified by the bad bulls?——Yes. I think they are more than nullified.

619. What effect do you think cheese-making would have on bacon production?——I do not think it would have any detrimental effect. I think it ought to tend to the growing of corn, wheat, and barley, to a larger extent than now, because, with separated milk, so much grain is not needed, but with the whey, which has been used with almost as good results as separated milk, you want an additional grain ration.

620. The only objection I raise is, that the climate is so uncertain, that, at the time the crops are being saved, a considerable quantity of the grain

might be spoiled by the weather?——In my experience, taking things generally all round, I do not think that is very much of an item to be considered.

623. The production of grain would tend to revival of many of the local mills that have gone out of use. I take it, the grain would be made into flour, and you would get the pollard ?——Yes.

624. You would give the inferior quality to the calves?——Yes.

625. Could calf-rearing and cheese-making be combined?——Not so well as butter making and calf rearing. I have seen cases where the Department Instructors have farms of their own, and their experience was that whey cream can be used with nearly as much advantage in feeding calves as separated milk.

626. Supposing a man had ten cows, and, after the month of May, the cows gave 40 gallons of milk per day, and he also had ten calves, he would get back from the 40 gallons of milk thirty gallons or more of separated milk; would the thirty gallons be more than sufficient to feed the ten calves ?——I do not think so.

627. Are you a farmer?——No, but I am very much in touch with farming. My point is, why feed the calves at all, if the milk can be made more profitable by turning it into more valuable products.

628. It will be necessary to replace cows that die, or get old and unsuitable?——If a man had thirty cows, five or six calves every season would do for that, and he has thirty calves.

629. *Thomas Johnson.* I take it that your opinion is, that the present method of concentration of milk and butter production, and the rearing of calves and store cows, is rather more subservient to the interests of Great Britain than it is helpful to the interests of Ireland?——Yes, that is my contention.

630. And that the concentration on butter and store cattle, for the English market, is detrimental to the interests, as man to man, in Ireland?——Quite so.

631. Do you find from experience that cheese-making requires more attention and more labour than butter?——Oh, much more so; double, at least.

632. Are you in a district in Limerick where there has been a considerable increase in the tillage area. Not during the war, but pre-war?——Yes.

633. Has that tended to increase the number of dairying cattle in your district?——The system of tillage does not lead towards increasing the number of cattle; it leads towards feeding better the number of people in the district.

624. Have you found an improvement in that respect in your district?——Food is more plentiful, and more varied.

635. *Professor Ryan.* Is there any water power near Tourmalulla?——Not in my district.

636. Are there mills around the district?——Well, mills are being set up in conjunction with creameries.

637. What power do you use in your own creamery?——Steam-engines.

638. What horse-power?——10 h.p.

639. What coal do you use?——We have a mixture of turf and coal.

640. How much do you actually use of turf ?——About 16 loads, or four tons in the week.

641. How much coal?——Two cwt. of coal in the day.

642. How much do you pay for the turf?——10/- a load.

643. How much for your coal, per ton?——Almost £4.

644. And the turf and coal are used for driving the engine, and not for any other purpose?——Yes.

645. *Father Farragher.* What class of bull would you say is best for milkers?——I would not recommend any particular breed. My idea of a good bull would be to get him off the best milker—off the registered pure shorthorn bull, and the best milker in the place, I would say.

646. Is the Hereford bull down there?——No.

647. And the Angus bull?——Very few in numbers.

648. Are the Angus good milkers?——They are beef animals, I think.

649. You have no particular bull to recommend?——No.

650. *Colonel Moore.* Don't you think if you had Milk Testing extensively throughout Ireland, and the results published of each class of bull, that would be the best way of finding out the best milk-producing breeds?——My experience is, that where the idea is to produce a large quantity of milk, of fairly good quality; it does not matter what breed is used, if the grading up is attended to. Quantity and quality will be got from any breed, provided you do not confine yourself to a fattening breed.

651. In all breeding, you breed certain classes of things for certain purposes. You must lay yourself out for breeding for a particular class of thing. You must lay yourself out for breeding for milk, and the local person cannot know very much about that. The only way is by testing again and again, and see what will produce the best milk results. That is the method in the case of race horses. There is a Stud Book kept, going back to 200 years, and that is a perpetual racing calendar result. In the same way, if you were continually

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testing breeds of cattle, those that did not produce good results, as regards milking, would be thrown aside?——I do not think horses are a comparison with cows. If you introduce a good milking breed into a particular district, it becomes bad. In breeding horses, you get plenty of good oats, but in breeding cows there is a distinction in regard to the supply of food. If you get a good milking cow in one district, and put her into another, she does not hold her qualities. My point is, take the best cow in the district and grade her up. She has been found, by the hard experience of the Irish farmer, to be best suited to that district. In each district you must find out the best cow, and make her the basis of your future breed.

652. *David Fagan.* Do you consider the plains of Meath would be suitable for milkers?——Yes, I do.

653. Do you know anything about the plains of Meath?——Not anything more than travelling through them.

654. I have seen a man who has a farm in Westmeath and a farm in Meath, with half-a-mile between them. In Meath, he has a heavy soil, and when he put cows from Westmeath on the land in Co. Meath he got a poor supply of milk, not up to the standard he was getting from the lands in Westmeath ?——I look upon that as being a question of breeding again. My contention is, that it can be proved that a cow can be bred, and that will give profit, on land worth 5/-, and will justify herself on land worth £5 per acre. If the breed is got to suit the Meath land, and it can be got to suit it, that cow will justify herself on that land, even though it is worth £5 per acre. In breeding cattle regard should be had to the class of feeding they will have, that will have an influence in determining the breed. I think you want a big-framed cow in Co. Meath, and a smaller framed animal in poorer districts.

655. *John Murphy.* As to the employment given in producing cheese as compared with butter, you say a greater number of people would be employed for the production of cheese?——One hundred per cent. more.

656. Do you think the farmers have begun to realise that it is not what suits England, or the English markets, should appeal to them principally, but what suits Ireland and the Irish people, and that they give first consideration to their own country?——I am sure that spirit is growing up in the country very much.

657. *Professor Ryan.* How many gallons of milk do you treat per year? ——2,000 gallons a day for six months, and 1,200 a week for the other six months.

EVIDENCE OF C. F. COSTELLO, Manager of the Ballyhaise Creamery.

658. *Chairman.* You are Manager of the Ballyhaise Creamery?——Yes.

659. *Thomas Johnson.* What is your view on the question of mixed dairying?——My idea is a mixed system of dairying should be introduced. The quantity of milk from each farm, in my opinion, is too small.

660. What is the average farm?——It would average five or six cows.

661. As to the labour employed?——There is a fairly good lot of labour employed. They are mixed farms, mostly tillage.

662. How long has the creamery system been in operation in your district?——In my particular part, it would be twenty-five years, or so.

663. Is the home milk system of churning being practised in that part of Ulster?——Yes, fairly; I suppose about one-fifth of the churning is done at home.

664. There has not been much reduction in your area?——No. In our area our output of butter has, in fact, increased.

665. *Chairman.* What do you think of the Cow-Test, as regards agriculture?——We made two attempts to carry out the tests, but the farmers would not follow it. They go in more for pig-feeding in that district. It is a great asset of the district.

666. *Thomas Johnson.* There is too much time being expended on butter-making?——There is too much concentration on butter production. I don't think butter production is remunerative enough for farmers, in comparison to other forms of production, such as cheese and milk.

667. But cheese, of course, is only a recent introduction, and is profitable, because of abnormal conditions?——Yes.

668. *Chairman.* If cheese went back to its pre-war rate, would it be a profitable industry for the country?——No.

669. *Thomas Johnson.* In regard to the falling off in supply, do you think it might be attributable to the Departmen's policy of introducing beef-producing strains?——Yes. I lay stress on that.

670. Have you any assistance to give us as regards the policy of buying a good quality of milch cows for the English or Scotch markets?——Yes; they came around my district, and gave as high as £60 for the best class milch cows.

671. *Stephen M. O'Mara.* There is a falling off of best milch cows?——Yes, of the butter class. The home production of butter is on the decrease.

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672. *Thomas Johnson.* Has this practice of seeking out first-class milch cows been common in your district?——Only for about three years.

673. Any condensed milk in your district?——No.

674. Any increase in the amount of tillage in your district?——Yes; a remarkable increase.

675. Beyond the limit set by the Government?——Yes; we run a corn mill. And this year, I think, we will turn out 1,000 tons of finished meal. Hitherto, it has been only about 220. I can now get produce from the farmers, and, heretofore, I have had to depend upon the Dublin market.

676. Do you grind maize there?——We did, but we cannot compete with the ordinary mills.

677. *Professor Ryan.* With regard to the mills, what about the velocity of the water?——The velocity is very slow.

678. Taking the water wheels, which do you use for the creamery?——The 75 h.p. We use, for the grinding, the larger wheel, and for the saw mill, the smaller wheel.

679. *Stephen M. O Mara.* You say there would be more profit for the co-operative factory in making Dried Milk than butter ?——Yes.

680. Would it be more profitable for the farmer, taking all his agricultural work, to have the whole milk used in that fashion?——Yes, I believe it would be.

681. Do you think he makes up for the loss by having skim milk to use? ——No.

682. *John Murphy.* You state you had to go to the Dublin market for corn?——Yes.

683. Are the farmers using it for feeding purposes, and is that condition general?——In our district it is.

684. Are farmers, generally, using their own corn and barley for home feeding?——To the west of where I am, they do, but, you see, they send to Dundalk, and other places

685. Do you think it profitable to do that?——I do not.

686. You heard what was said about killing off these old bulls?——There should be something done with them, anyhow; they are a curse in the country.

687. *P. W. Kenny.* As to the profits of Dried Milk, and the conversion of milk into butter, what basis do you work on?——On the present price of butter. We are giving the farmers, at present, only 1/- a gallon for milk. I calculate separated milk at 1/4 a gallon.

688. You estimate at what price you could sell it?——I believe it could be sold at 2/2 per gallon, leaving 1/8 per gallon.

689. You have no particular knowledge as to what is the price of Dried Milk in the market, and how it is made up?——No; the manufacture of dried products is so limited, we have no idea what competition would do. The expense would not be so great, because, altogether, we are working with water; we ought to have steam as well.

690. There was evidence given this morning that it would be very expensive—the conversion of milk into powder?——There are only some farmers to whom it would be expensive.

691. *Chairman.* Your price of 2/2 would represent your sale price at creamery?——No, my idea is, it could be retailed.

692. *Thomas Johnson.* You suggested there might be a Central Organisation, with expensive machinery, for experimental purposes?——Yes, to deal with dairying in various forms.

693. Do you grind all kinds of corn?——Yes.

694. Have you any trouble with oatmeal?——No; it is working quite satisfactorily.

695. You make your own boxes?——Yes; we make our own boxes, and work on our own premises.

696. Do you do pig-curing?——Yes.

697. Have you any difficulty about quantity?——We have no difficulty about quantity, but there has been a difficulty about licences. They persecuted us in the beginning, but they are not going on with it latterly. They bring them in generally dead.

698. What happens the bye-products now?——They go to waste.

699. Farmers won't use them?——No. We sell the offal at a very cheap rate there.

700. What do you sell the offal at?——We sell it at from 6d. to 1/- per lb. In Dublin, I get 1/9 per lb.

701. It would be a very important thing for the people, generally, if they knew the importance of these offals, and that you can use them at home?——We are negotiating now to get a German butcher—an expert in sausages, and all that kind of thing.

702. *Stephen M. O'Mara.* I suppose it is more economic to kill these pigs in the factory than in the homes of the farmers?——Yes.

EVIDENCE OF J. A. SMITH, Farmer, Rathanny, Hospital.

703. Some years ago, about five, I think, I began to make experiments in the cultivation of beet-root, and found it very good food for milch cows, and in feeding calves. The cows got very thin, and when giving it to them for about a month, I found them in very good condition, and giving a good supply of milk.

704. *Chairman.* Was the milk good?——The best, and cows gave an abundant supply.

705. Was it up to the usual quality?——Oh, certainly, but I find in my district the farmers have an objection to growing beet-root. They consider mangold is more profitable.

706. I have heard the feeding of cows with mangolds impoverishes the milk to a great extent?——Yes, I have heard that. I had some letters in the Press on that subject, about three years ago, and they showed that a farmer, for some months in the year, fed cows on sugar-beet, and the superior quality of his butter was due to that fact.

707. *Thomas Johnson.* Do you farm to any considerable extent yourself? ——Not to any considerable extent.

708. You have made no tests as regards beet production?——No, but I have got an analysis of beet grown this year from Sir Charles Cameron. I have grown about an Irish half-acre this year.

709. Have you any estimate of the quantity you were able to grow on half an acre?——I consider the right quality would grow about 30 tons to the acre. The rough quality would produce a very large quantity. On the Continent, where they grow beet for refining purposes, they grow it in lines 16 and 17 inches apart. I cultivate it on the same principle as the mangold, and planted it in drills two or three inches wide.

710. *Professor Ryan.* This half an acre you grow; you do not state whether it is suitable for the manufacture of sugar or not?——Sir Charles Cameron says the roots are all of high quality, and contain a high sugar percentage. I experimented for quality purposes, as a preliminary, to induce the people to grow it for manufacturing purposes. It would be no use establishing a refinery, unless the farmers would largely cultivate the root. In Germany, an analysis was given for 7 or 8 provinces, and the percentage of sugar was 7 or 8 per cent.

711. You got?——16.5, and my crop was not sown until the 25th May, whereas it should have been sown in April.

712. Is there any water power at Hospital?——No, there is not.

713. *Roger Sweetman.* Can you use the tops of the beet at all?——They are very useful for feeding cattle in the month of November, when farmers give dairy cows cabbages

714. If you keep mangolds right into the Spring, there is a change with regard to its sweetness?——If you mean, the longer the mangold is held over, the sugar contained increases; that is so.

715. Would that approach at all to sugar contained in beet?——Oh, not at all. My experience is, it is a most valuable food for cattle, immediately after calving, and especially for delicate and milch cows. Mr. Fawcett sent a letter about four years ago, to the *Munster Farmers' Association* on the question of sugar beet, but they did not take the matter up at all.

716. *P. W. Kenny.* You say you can get up to 30 tons of beet to the acre—is not that rather a high estimate, compared with Continental countries?——I mean, per Irish acre.

717. Do you know it would revolutionise the farming system of the country?——Yes; it has been said to me it would be a great stimulus to winter dairying.

718. Yes, but you must have special plough arrangements?——No, I have had no special plough arrangements, but, of course, in my part of the country, the soil is very deep.

719. Do you grow it on the flat?——On drills.

720. *Thomas Johnson.* You are leaving yourself a big margin in your computation?——I can honestly give myself a margin.

EVIDENCE OF P. F. CASSIDY, Farmer, Arney, Enniskillen.

721. The most profitable method of dealing with the milk supply, keeping in view the production of the largest amount of food, must first be determined before any attempt can be successfully made to increase the yield to the standard attained in other countries. As it is to the average farmer that the increase in production must be looked for, the system under which he works needs to be considered. In general, one would imagine that the ordinary farmer is not much concerned about the dairying side, as he appears to give more attention to grain crops and potatoes, than to milk production. I consider the present system of creamery working the least economical of dealing with the

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milk, as it aims at the production of butter alone, any bye-products being practically useless for human food, and generally considered of little value for stock feeding. The price of butter regulates the price of milk. The present system of separating the cream from the milk leaves no margin available for other purposes, namely, retail and cheese-making. By the separating system the farmer is returned three-fourths of the quantity of new milk supplied. For every 100 gallons of new milk supplied he receives 75 gallons of skim milk. His return, then, from dairying is on the amount of butter produced by his supply of milk and the amount of skim milk returned to him. As the 75 gallons of skim milk is required for stock feeding, pigs., etc., the continuance of its equivalent must be considered in any scheme for the manufacture of other milk products. The value of the farmer's milk supply, per 100 gallons, under the present system of separating and churning the cream, or butter fat, is, at present rates, 1/1 per gallon for new milk, and 75 per cent. skim milk :—

100 gallons of new milk, at 1/1	£5	8	4
75 gallons skim milk, at 3d.		18	9

The 100 gallons will produce, at present, about 42 lbs. of butter, which, at 2/10 per lb., will realise for the creamery £5 19s. 0d. In the old system of churning all the milk, every 100 gallons of milk would produce 125 gallons of buttermilk, as 25 per cent. of water must be added in churning. The amount of butter produced would be much the same, opinion being divided as to which system produces the more, but buttermilk is far more valuable than skim milk. Buttermilk can be used in a variety of ways for food, for which skim milk cannot, such as drinking, and so forth. Keeping in mind the 75 per cent. required by the farmer for stock feeding, and so forth, in order to maintain this, only 60 per cent. gallons would require to be ripened and churned, in order to produce 75 gallons of buttermilk. Assuming that 60 per cent. is set aside, there would be 40 per cent. available for the purposes, such as retail, cheese-making, and so forth. I estimate that, in these circumstances, a farmer's return from 100 gallons of new milk produced would be £3 15s. 8d., or 60 gallons churned and 75 gallons of buttermilk returned; £1 4s., or 16 gallons of new milk retailed at 1/6, and £2 4s. on 24 gallons made into cheese, and sold at 1/10, making a total of £7 1s. 8d. Calculating on the present rates, the farmer would be getting 1/3 per gallon for his milk the consumer would get milk at 5d. per quart, and cheesemaking could be carried on profitably, without interfering with the present routine of the farm.

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A great drawback to winter dairying is the tillage question, and the available labour, and, in connection with this, the full problem is a large one. At least two months must be devoted to providing turf, and that at a time which greatly interferes with tillage operations. The time necessary for cutting and saving turf could be devoted to an increase in root crops, and so forth; so that the farmer would be in a position to make an effort to increase his winter supply of milk. In many districts the farmers have to go a distance of ten miles for turf. In one district, from Killen to Derrygormley—or eight miles long by seven miles wide—is without turbary. Therefore, some effort must be made to relieve the farmer from the drawback which the present method of providing fuel entails.

Taking into consideration the fact that buttermilk is so much superior to skim milk, perhaps 50 per cent. of the total milk supply would be sufficient to maintain the present system of stock feeding, thus not interfering, in any way whatever, with prevailing conditions in the different districts of the country. The majority of farmers do not like undertaking radical changes, but they would not be much concerned with the purposes to which the milk is applied, if they were assured of a remunerative price, and a supply of buttermilk or skim milk for stock feeding. Therefore, if these changes were undertaken gradually by the Societies, the farmers would assist.

Butter made under the system of ripening and churning the milk whole, would be of finer quality than the creamery butter, providing the same attention and cleanliness is observed. I do not think that the fact of the cream being separated and churned alone is what has placed the Irish butter trade in the position it now holds. As the skim milk is practically useless for human consumption, except in home baking, the farmer must retain a quantity of new milk for porridge, etc., which could be greatly reduced if a supply of good buttermilk were available. Buttermilk, as we knew it before the introduction of separators, was far more nutritious than even new milk, particularly during the hot summer weather, and could be used in a great variety of ways.

As provision must, at present, be made for ripening and churning 25 per cent. of the supply, the introduction of the system of ripening and churning the milk whole would only require a double supply of vessels for setting, and the churning capacity might be managed on the present basis with extra labour. The equipment could be principally produced in Ireland, even to the power, if advantage were taken of the water power, by erecting electric dynamos.

Providing a supply of milk were available for retail to non-customers from the creameries, the co-operative system could be extended, so that the distri-

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bution would be conducted on co-operative lines, thus bringing the producer and consumer more closely together than could be attained in any other industrial enterprise, to the better advantage of both.

As to collection, the present mode is by separate cans for each supplier being collected and drawn by horse van to the creamery, and the skim milk delivered on return. The cost is about a halfpenny per gallon. Another method would be by having two churns one for holding the new milk, and one for the buttermilk. Thus, when the new milk is collected, the buttermilk could also be delivered, and a double journey saved, thereby reducing the cost of collection, which would mean that a much larger supply could be collected by one horse van than at present.

Another point in connection with winter dairying under the present system is, that in most districts creameries only work two days per week, and even at that do not deal with nearly the same amount of milk per day as in the average summer season. Hence the milk has to be kept at the farmer's house, sometimes for four days, and often not under hygienic conditions. This is responsible for reducing the quality of the butter produced in winter, as the milk is not sweet or fresh when brought to the creameries, and the butter becomes very tough in texture and rancid in taste.

Buttermilk cannot possibly be produced from the skim milk produced in creameries, as whatever process it undergoes leaves it in a state that is both repulsive to taste, and often to smell, as well as repulsive in appearance. Cheese-making could be carried on at a central factory, in the same way as the Continental creameries are worked.

722. *Thomas Johnson.* Do you send milk to the creamery ?——Yes.

723. Has it been customary in your district for the milk to be churned whole ——Yes.

724. And your proposal is, that the creamery should adopt the old method ? ——Yes.

725. Do you know any part of the North of Ireland where that is done? ——No.

726. Well, I can tell you that it is done by a private company of farmers and traders in two places in the North, and that they get a very good price for buttermilk by retailing it. Do you think that the advantage of the buttermilk would be so much better than the separated milk?——Oh, yes.

727. And you think you cannot get good drinking milk from separated milk?——I know that you could not possibly turn skim milk in our district into buttermilk. As it comes from the creamery, it has a taste that would not be palatable. It is not the same as it would be shortly after the separating system was adopted. You could not drink it now.

728. Have you any knowledge of cheese-making, or of home cheese-making?——No, I have no knowledge of it. I don't know of any cheese being made in the country at all. I am from Enniskillen.

729. Have the Scotch Wholesale a creamery in Enniskillen?——Yes, they are butter-making. Of course, at the time the creamery was introduced there was no profit scarcely being made from butter.

730. How many cows do you milk?——I milk three.

731. The district is one of small farmers?——Milk farmers and mainly tillage.

732. You say the adoption of your system would lay the foundation of a real system of co-operation. What do you mean by that?——If there was a supply of milk available from each creamery, the consumers could join in that Society. At the present time they are paying 2/8 and 3/- per gallon for milk.

733. You mean that there might be a bigger consumption of drinking milk?——Yes, and they could have an interest in the farmers' Creamery also.

734. *David Fagan.* Do you think if the farmers knew this they could take to winter dairying?——They would not be able to raise the produce to maintain it, and they could not possibly.

735. Is it for want of knowledge?——No, it is not; but they believe that it would not pay them. The majority of cows go dry in November, and around my district they don't go in for hand-feeding at all. When the cows are giving a little milk they give them cakes or feeding, but, with the price of milk and the price of grains, they don't think it would pay to feed them.

FISHERY.

EVIDENCE OF WALTER KEOGH, Harbour Master, Kilmore.

736. *Chairman.* Mr. Keogh; I understand you are Harbour Master at Kilmore, and you are going to give us some information about the conditions of fishing in your district? Perhaps you would tell the story in your own way?——Fishing is very bad in Kilmore. There are no markets, for one thing, and there is a very bad way of fishing. It is all hand-line fishing. There is no trawling, and, of course, there is plenty of good trawling—i.e., ground—in Kilmore. Foreign trawlers come there.

737. And take catches?——Yes, sir.

738. What kind of boats do you use?——Small boats, five ton boats.

739. Is there a good supply of mackerel there?——Yes, sir.

740. Is there a good supply of cod?——Yes, sir, for the last year and a half; and pollock.

741. Would you say, if you could get markets, with reliable salesmen in these markets, that you could supply big demands?——You could.

742. At the present time, what happens in regard to the market?——At the present time there is nobody there but local buyers. There is no other way of selling. Cod is sold from 3d. up to 1/-—an average fish of 4lbs. for 3d. up.

743. *James C. Dowdall.* A 4lb. fish for 3d.?——Yes. You would sell them in a city for 1/3 and the prevailing price is 1½d. per lb. Mackerel get from 9d. to 1/-. That would be in the morning.

744. *Chairman.* Per dozen?——Yes. In Wexford, I know people who had to pay 4d. each for them. One buyer has a monopoly.——No one else buys them.

745. *Edward Lysaght.* Is there nobody else enterprising enough to start in opposition?——No, sir. The fishermen tried to get the markets in Waterford, and other places, but the returns they got back were not very encouraging.

746. No effort has been made to start a Co-operative Society?——No, sir. There is an ordinary Co-operative Society in the town of Wexford.——None in Kilmore.

747. How many fishermen are connected with the work at present?——Sixteen boats—three men to each boat.

748. Even with the bad prices they get enough of it to make a living?——Yes.

749. *Thomas Johnson.* When you speak of prices, are there fixed prices?——Some days you would get 9d. for mackrel. The next day, maybe 1/-. The prices vary that much, and a little more, per dozen.

750 Do you put them in boxes?——Yes. By the hundred.——I can tell you that I never put any in boxes.

751. What would one of them weigh?——1½lbs. or 2lbs.

752. Caught on a line?——By hand.

753. *James C. Dowdall.* You say there was a good supply of mackerel for the last year and a half?——Yes. There wasn't a good supply before that.

754. Explain how, in previous years, the supply was not so good?——It is believed there that steam-trawls have ruined the fishing. Since the war—1914—fish is caught as plenty as ever. The steam trawlers were off. At the present time I don't think you could do much. There is some obstruction—a good deal of vessels torpedoed, and mines.

755. *Thomas Johnson.* How far do your boats go?——About six miles from the shore.

756. There is no such thing as drying fish in your place?——No.

757. Was the formation of a Co-operative Society ever discussed amongst yourselves?——No, sir.

758. Where are the fish taken to by this merchant?——Wexford.

759 *Edward Lysaght.* At a profit of 500%.

760. *James C. Dowdall.* What exactly would you recommend for improving the return you get from fishing?——If there were better markets, you could send it away, and stay out long enough to fish. You could stay out longer, if you had a market.

761. *Chairman.* What is the difficulty at present? Is it that you are rushing to get in first?——Yes, sir; perhaps the last man in may have to keep his fish himself.

762. *James C. Dowdall.* Could you not come to an agreement to come in together?——Perhaps you could not sell. There is no one there to take them.

Fisheries.
Walter Keogh.
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763. *Thomas Johnson.* For how many days in the year do you follow fishing?——Weather permitting, you could follow it from February up to November.

764. Do the fishermen also do a little farming on their own?——Yes, a little. Nearly all the fishermen have a half acre to an acre of ground.

765. *James C. Dowdall.* You have a market, but a very exclusive and a very bad market. Even if you get any quantity of fish, you cannot sell it?——I have known boats being through at 8 o'clock in the morning, with 150 cod-fish or 200 cod-fish, where they would be out until 12 o'clock or 2 o'clock, if they had a market.

766. *Chairman.* You had to come in when you had caught enough?——Yes; if three or four boats came in with that complement, nobody else could sell. They may throw them away, or keep them for their own use.

767. *Thomas Johnson.* Do they cure them?——Yes. Has there been any attempt made to improve the method of curing?——No, sir.

768. Is there any net fishing?——No, sir. All line, but there is a lot of good lobster fishing.

769. Are some men engaged in lobster fishing?——Only one boat last summer.

770. Is the lobster sent to Wexford?——Fifteen years ago they were sending, but they were paying very bad during the war time. Stuff was too dear—lines and gear. You could not get it.

771. *James C. Dowdall.* How far is Kilmore from Rosslare?——About 20 miles by water. It is connected by rail from Bridgetown, about five miles away.

772. *Thomas Johnson.* Are there no vehicles you could yourself hire or use? Even a horse! Is there amongst you a horse and car that could do that?——I suppose they could.

773 *Chairman.* Your worst difficulty is in finding your markets, and means of conveying the fish to market?——Yes; and somewhere we could get a scales-market for them.

774. That is, instead of your local markets? You want to find a market at a greater distance; and you want means of transit to that market?——Yes, and better prices.

775. *James C. Dowdall.* Presuming you had another market, would you have any cohesion, or organisation, among yourselves to avail of it, jointly?——Yes, sir.

776. You are competing against one another?——Yes.

777. And in case a good vehicle was brought along—sheltered from the sun—would all the fishermen take to the method, if it was owned by one fisherman ?——I think so.

778. There is no such antagonism amongst you that you would not have that arrangement ?——I don't think so.

779. *Thomas Johnson.* Is there any other fishing station near you?——Fethard.

780. How many boats are there there?——About ten or twelve.

781. On the other side?——Slaid is next.

782. *Chairman.* You are all competing for the one market—Wexford?——Yes.

783. *James C. Dowdall.* Do they go to Wexford?——Most of them.

784. *Thomas Johnson.* Do the Fethard men go up the river at all?——I don't think so.

785. Do the Dunmore men come across there?——The Dunmore men go up to Waterford.

786. *Edward Lysaght.* Can you tell me how much a boat earns. Would it earn £150 in the year ?——It wouldn't. For the fishing season—about five months of the year—they might earn up to £60 or £70 per boat.

787. *Chairman.* It would not average £25 per man for the season's fishing ?——It would not.

788. *Edward Lysaght.* Are these men idle most of the time during the season they are not fishing ?——Yes, sir, unless they go away. The land they have is not enough to keep them.

789. *Thomas Johnson.* They go away fishing?——They go working.

790. *Edward Lysaght.* What class of work?——Farm work.

791. *Thomas Johnson.* Is there not a custom to join the larger boats—for instance, the Arklow boats ?——No, sir; none of them ever go. Anyone that would go away, would go coasting, or would go away deep water altogether.

792. *Chairman.* Have you ever tried the possibility of co-operation with the fishermen in other villages ?——No, sir.

793. Would it be any advantage if the three villages, more or less, combined for curing, or otherwise ?——If they had a curing station in it, it would, I think.

794. What are the possibilities of establishing a curing station, if the three villages were amalgamated into one centre for fishing—Have you ever considered it ?——No, sir.

795. *Thomas Johnson.* As a matter of fact, the class of fish you get is pretty well fresh market fish. There isn't except for dry cod much curing in your class of fish ?——No sir.

796. The quantity of mackerel you get would not be worth curing?——

797. *Chairman.* They don't know what they would get, if they stopped out long enough. Is that the position ?——Yes, sir.

EVIDENCE OF J. TRAYNOR, Asst. Surveyor, Co. Wexford.

798. *Chairman.* I understand you are the Assistant County Surveyor for Wexford ?——Yes. I made certain observations in the fishing village of Kilmore when I was there during a portion of last summer. The men go out in the morning at 4 or 4.30, and cast their lines, and when they get from 15 to 20 dozen mackerel, or haddock, they rush in to sell, and they sell at prices which do not exceed, at anytime, 1/- per dozen.

799. About 1½d. a lb. for the catch ?——Yes. I have known mackerel to be taken in other places and sold for 3/6. There is no doubt the fish is there in plenty, if the men had only markets and proper facilities. If the markets are secured, practically any demands made on the men will be supplied.

800. No attempt is made to develop any kind of trade by Rosslare?——None whatever.

801. Would there be much difficulty in working up a trade with the Welsh markets by Rosslare ?——All that is wanted is organisation. There is a good pier, and fairly good facilities by train.

802. How many men are there in the three stations, with the 50 in Kilmore ?——I cannot speak for Rosslare, Duncannow, or Riverstown. There are 50 men in Kilmore.

803. *Chairman.* Do you agree £25 would be the average earning of these fishermen for the year ?——I would.

804. What are the possibilities of establishing a curing station?——I believe if there was a curing station established at Kilmore, good results would follow. Of course, as far as curing is concerned, expert men should be sent down to instruct them.

805. What about local feeling? Is there any likelihood of objection from other districts ?——Possibly they would like to have it at Rosslare. Rosslare is a station at the mail station.

806. They are anxious to help each other—would they be likely to quarrel over the establishment of the Station ?——Oh, I don't think so. Clearly, it would be to the advantage of all to have a curing station. I have been speaking to the Parish Priest down there, and they are all very eager to have the thing settled now. We had a meeting there recently, and it was decided to call upon the County Council to spend money on the pier.

807. Even if the pier is there, it is not going to help them anything. Although that might be a step in the right direction, it does not go to help development there ?——Of course, development depends on the people themselves.

808. But, don't you think that is the wrong thing to start on?——The right way would be to get the markets for the people.

809. At any of these meetings you refer to, have any of the men from the neighbouring stations been brought into consultation ?——No.

810. You don't know what the possibility would be of combined action? ——I cannot say.

811. *Thomas Johnson.* How many boats are there at present in Kilmore ?——About 16 or 17, with three men to each boat. Fishing is a very uncertain quantity, and to speak of a definite quantity as the average, is rather a chance.

812. You say you saw 20 dozen mackerel caught at a certain period of time ?——Whilst I was there they caught an average of 20 dozen each morning in every boat. The moment they got the 20 dozen, they rushed in to sell. That would be practically useless as a curing station for the American markets, unless there is a very big increase.

813. Do you know whether the quantity of other larger fish, besides mackerel is very considerable ?——There is a good supply of cod always to be had there. Lobster are very plentiful in the group of islands, about three miles from the shore.

814. *Father Farragher.* What sort of nets have you, and what size boats? ——Ordinary nets and sailing boats; not very big, with three to each boat.

815. You were there in September. Do you know do they fish any time of the year except that ?——From February to November.

816. Do they use nets?——Only hand-lines.

817. What is the population?——About 500.

818. And 17 boats ?——Yes.

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S19. I suppose they don't regard fishing as the main source of revenue? I suppose it is only an auxiliary ?——To a certain extent it is the main source of living of some of them. Some of them have only an acre of land.

S20. You think if they had a better market they would fish more constantly, and more exclusively?——They would.

S21. They don't fish for anything but mackerel?——Mackerel and cod. Herrings are more numerous on the Rosslare side.

S22. What sort of ground?——Sandy bottom.

S23. Is it clean?——Yes; and there is a splendid harbour, that would accommodate any number of ships.

S24. Do you think if they had motor boats that they would take fish?——They would.

S25. Because, of course, as far as a Curing Station is concerned, unless you had a big quantity it would not warrant it ?——That is so.

S26. Would there be any possibility of getting the people on the coast there to join together and form a Co-operative Society ?——I put that to them also, and they agreed with the idea. They would form a Co-operative Society. Of course, it is very difficult to get them to keep to that.

S27. How long would it take to get to Dublin?——Five hours by rail from Bridgetown.

S28. What do they get for mackerel—a penny a piece?——That is a high price. I saw them sold from 9d. to 1/- a dozen.

S29. Are there any men there who are living exclusively on fishing ?——No; they have all some other occupation—they hire with farmers, and all that

S30. They don't stop out at night at all?——No; they go out in the morning.

S31. *Professor Ryan.* I wanted to know if there is much water power in the South of Wexford ?——I have been asked to go into the matter, but, unfortunately, I haven't had time to go into it. I hope to get something done about it in the near future.

S32. Is there much in the way of Inland Fisheries—in regard to the disturbance of the river ?——The Conservators there, wouldn't they raise objections if you interfered with the water power ?

S33. *Roger Sweetman.* I fancy so. What Fisheries are they?——The Slaney Fisheries.

S34. *Stephen M. O'Mara.* In regard to the quantity of fish, you say they catch 20 dozen in two hours. I understand the reason they stop fishing is to catch the morning market ?——To catch the only market they have.

835. Is there any reason why they wouldn't go on fishing, if they had a Curing Station, for four, six, or eight hours, and continue to get a sufficient quantity ?——If they had an efficient Curing Station, to my mind they could fish on.

836. Consequently, there might be a sufficient quantity for a Curing Station ?——There would be a very profitable supply.

837. You say there is a fishing station in Rosslare?——Rosslare is north—Dunmore south.

838. There are three other fishing stations ?——Yes.

839. Rosslare fishing station is close to a railway station, and Rosslare would perhaps, be more suitable for a Curing Station than Kilmore ?——It would.

840. If you erect a Curing Station at Kilmore, the people would have to bring the fish from Rosslare to Kilmore, and back again to the railway ?——Yes.

841. With a Curing Station, wouldn't it be possible to get a supply of Irish fish, fresh, either to Wales or to the Dublin markets, or to other countries ?——That would be possible. They did send fish to English markets, but they got such a poor return for it. They were done for absolutely. They gave it up.

842. About this matter of salesmen; that would be for the fishermen to do, by arrangement among themselves. You are hopeful that something will be done, as a result of this meeting you have had ?——Yes. If I could go back and say there was a possibility of getting proper markets, I am certain I could get a lot more work done. If we could get markets, we could increase the catches there 300%.

843. You, yourself, went to the Dublin markets and tried to arrange for the sale of fish there ?——Yes.

844. Have you any idea why they didn't succeed?——I only wrote to them, and they gave me very little satisfaction in reply to my letter, so much so, that I thought it wasn't worth while pressing it any further.

845. They just put you off ?——They didn't think it worth while.

846. *David Fagan.* Is there any ice available ?——I think ice could be got. There is none in Wexford. The nearest would be Dublin or Waterford.

847. Unless you are able to get ice you cannot possibly develop the fishing there ?——If it could be got in Waterford it would be convenient.

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848. *Chairman.* Have they none in connection with the Dead Meat Factory in Wexford. There is no chilling factory ?——No.

849. *Stephen M. O'Mara.* Isn't the service good enough from Dublin to get ice in a reasonable time ?——Oh, yes.

850. *David Fagan.* Of course, it would be very expensive?——At present it is £3 10s. a ton.

851. *John Murphy.* Wouldn't it pay the fishermen to have a light cart to run it into Wexford ?——It would.

852. You say it retails at 3/6 a dozen, and they only get 1/- a dozen. Wouldn't it pay them to have some combination amongst themselves to run in a light van into Wexford a couple of times a week ?——It would pay them, if they had some one to do it.

853. Have they no initiative themselves ?——None at all. You would be surprised.

854. You say they only go out fishing for a couple of hours in the morning ? Is it that when they get a catch of 20 dozen fish, which brings them a few shillings, they are satisfied to sit down until that is spent, as happens in some other places ?——There is no alternative.

855. *Chairman.* The previous witness answered that question. He said they had to rush in—they were hustling to get to the one buyer.

856. *John Murphy.* It argues want of combination. Surely there are some people of some influence in the locality, who would take sufficient interest in these fishermen, to create a combination between them, by which they will be able to save themselves from all this loss.

Chairman Competition amongst themselves is as equally keen as competition with outlying stations.——I think the stations further south also send their supplies to Wexford.

857. *Chairman.* I mean that the competition amongst the fishermen is just as great as it would be between two stations?——Yes.

858. *John Murphy.* What occupation do they follow for the remainder of the day, after fishing for two hours ?——All I see them do is clean out their boats.

859. Sitting on the strand. Unless you get them to take more interest in their own welfare, and show more initiative, I am afraid it is hopeless. Surely there should be local people to rouse them ?——Rousing has been done. If I could go to these men and say, we can get markets, I am sure the men would do a lot more. They are eager enough to work, if they could get the markets.

860. Do you think they could combine to run a light van into Wexford—it would be worth while trying it ?——It would, certainly.

861. That would distribute wealth amongst fifty people, instead of allowing one individual to have it ?——Yes.

862. Some of the merchants in Wexford surely ought to take an interest in it ?——I tried some of the merchants there, and they could not do anything.

863. *Roger Sweetman.* I may say, the race between the poor chaps to get in first is understandable. Would you say, from your experience of the Wexford market, that the problem would be this: If they could get the fish into the Wexford market, they might be able to sell the whole catch ?——Take the population of Wexford at 11,000, after all, 500 dozen fish would be as much as they could sell in the town.

EVIDENCE OF THOMAS MAY, Fish Salesman, Howth.

864. *Chairman.* I understand, Mr. May, you are a Fish Salesman and will be able to give us some information on the Irish fisheries?——Yes. With your permission, I propose to read out a statement I have prepared :—

The Branch of the Industry which I am mostly concerned with is the Drift Net Fishing; that is to say, the herring and mackerel section. This is the most important section of our Fishing Industry, 80% of the fishermen of this country being engaged in it alone. The principal ports these fishermen live in are Arklow, Howth, Kilkeel, Ardglass, Portavogue, Kinsale, Cape Clear, Union Hall, Baltimore, Cahirciveen, and, in the North, Killybegs and Burton Port.

Although Arklow is the principal port for fishermen on the East Coast of Ireland, it has no local Drift Net Season; and the Arklow men fish from Howth and Dunmore for herrings, and from Kinsale, Baltimore, and Valencia for mackerel, during the spring and fall.

90% of the boats of the Arklow fleet have motors installed. In my opinion, it is only boats with such motor installation that should be considered in a discussion of the future welfare of the Irish Fishing Industry. Assistance is required in advancing loans for the purchase of motor-boats, or for the installation of motors in boats already owned by fishermen or traders.

Nevertheless, there are drawbacks in the methods of financing adopted by the Fishery Department. In the first place, the Department has been more generous to Arklow than to Howth. Only three Howth motor-boats have been

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got through the Department. Leaving this aside, it has made other grave mistakes. Loans were to be repaid within ten years, the interest being at $2\frac{1}{2}\%$, but a mortgage was executed in each case, and the boat and gear had to be insured. You will be surprised, gentlemen, when I tell you that the insurance firm selected had its headquarters in Sunderland, the Department arranging that it would pay half of the insurance calls. The ludicrous result has been that the insurance calls which the boat-owners had to meet were, in most cases, more than the instalments due to the Department. In other words, a fisherman who is advanced £1,000 for the purchase of a boat will probably have to pay about £2,000 before he is clear. A more business-like arrangement, of course, would be the establishment of a mutual insurance amongst the Irish fishermen themselves.

Then, too, the number of types of motor should be limited. Standardised parts might then be made available at the different ports. At present, owing to the variety of types, the boat-owner is at the mercy of whatever engineer or blacksmith that is handy. An exhaustive study should be made of the existing types of motor, and the best ones selected and adhered to.

In addition to these two handicaps, there is that of enhanced expenses. These expenses have gone up 350%. Oil, pre-war $3\frac{3}{4}$d. a gallon, has gone up as high as 2/-; provisions that used to cost about £8 per boat, per week, now cost £20. That £20 comes out of the total, and the balance is then divided equally between the owner, skipper, and crew, the owners providing gear. This gear, which has risen 60% in price, is manufactured in Scotland. I suggest, gentlemen, that its manufacture would be a remunerative line for Irish investors.

You understand, therefore, that £40 would have to be made before the crew would be entitled to a £1 each.

I turn to the marketing of fish. Here, the buyer has been very hard hit by the war. The cost of salt, of empties, of labour, has gone up enormously. Empties in pre-war days were 1/11 a box; now, they are 7/6. Salt has risen from 30/- to 110/- a ton.

Deficiencies in transport are, however, the worst grievance of the buyer. Traffic charges are high. There is an insufficiency of wagons and freighters, so that, again and again, valuable deliveries of fish have been condemned owing to the delay in transit. Grossly exorbitant prices are charged for the return of empties, that is, whenever the fish-buyer is fortunate enough to get back any of them.

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Icing, too, is an important consideration. Much of the fish that was condemned might have been saved, if there had been a proper ice factory, with a guaranteed supply of ice for the Irish fish trade. Without such a supply of ice there can be no genuine development of the mackerel trade. Fish, which I have despatched from Valentia, Co. Kerry, took four and a half days to reach London. The result, of course, was condemnation. Ultimately all this reacts upon the fisherman, for, under such circumstances, good prices are an impossibility.

The herring-curer is in the worst plight of all. His market used to be the continent, and that is now, perhaps not inexplicably, closed to the Irish buyer. No buyer could gamble in cured herrings here, unless green fish was at a dumping price, which would be no use for the fisherman. If direct trade with the continent ever becomes possible, however, I should say that the northern ports, like Killybegs or Burton Port, are better adapted for curing, because from these ports there is no easy transit to English markets, or even to Irish markets at that. In Howth, on the other hand, buyers turn to herring-curing to relieve a glut, or when there are bad prospects of immediate sale across channel.

These, gentlemen, are the chief drawbacks from which the Irish fish trade suffers at present. Departmental niggardliness towards Howth fishermen; too great variety of motor types; lack of repair shops at the ports; high cost of empties, of salt, of gear, of transit; insufficiency of ice; of railway wagons; and of ships; and, lastly, the closure of the continent to direct Irish trade. I have suggested one or two remedies, but they will be futile unless an adequate supply of special trains, for fish alone, are run for the buyers.

I have said nothing about the Trawling and Line part of the industry. I leave that to others. But when the question does come up for investigation, I trust the claims of Galway, and the other Atlantic ports, will receive suitable consideration. To my mind, with proper rail and other facilities, Galway could be made to rival Fleetwood. I thank you, gentlemen, for your patient hearing.

865-866. *Thomas Johnson.* You spoke of the Continental Trade for Irish herrings. Is that very extensive?——I, myself, did cure herrings for Germany. When the war broke out I had 150 barrels at Howth, and I could not move them at all.

867. You spoke of June, July, and August?——Yes. Later on we rough-pack them. You can salt these freely in Ireland. They were ungutted. You could not rough-pack Howth herrings in the summer.

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868. Herrings at that time ought to be fairly good ?——Yes.

869. Usually a fresh herring would make a bigger price than a cured herring. You send no fresh herrings to the Continent? *Chairman.* I think Mr. Johnson means that a fresh herring sold in England would make a better price than a salted herring on the Continent.——Exactly, and a quicker sale.

870. *Thomas Johnson.* The point I am trying to arrive at is, whether the Continental trade was a regular thing?——It was a regular thing. In pre-war days Continental buyers came over and shipped herrings direct.

871. Was it long established?——It has been established about five or six years, from my knowledge, in Howth.

872. Have you anything to say about the extent of the herring fishing on the East Coast—why there has been a decline?——There is no recognised mackerel fishing on the East Coast. Very often the Howth boats bring a quantity of mackerel mixed with the herrings. In curing mackerel quality comes into consideration.

873. Take the herring— has there been a decline in the herring fishing on the East Coast?——There has been somewhat. Of course, during the war Howth was visited by boats that otherwise would not have come. In 1915 and 1916 there were up to thirty from Yarmouth.

874. How many boats are there in Howth now?——About a dozen.

875. Does your experience of Howth go back any time? I think there used to about thirty?——There would be.

876. Perhaps fifty at one time?——I should say about twenty or so.

877. Do you know anything about Arklow?——Yes.

878. There are about thirty boats in Arklow ?——More. I have some boats of my own.

879. When motors were installed, the old boats were, you might say, scrapped. Most of the Arklow boats are new boats?——Some of the old boats had motors put into them.

880. Where do the Arklow boats carry through their fishing in the main? ——In the springtime they go to the mackerel fishing at Kinsale and Baltimore —in the early spring—and some go to Dunmore, Co. Waterford. They finish up at Howth in the autumn. Of course, the Arklow men are mainly depending on fishing. Down South a lot of them do farming.

881. What does it cost to transform a sailing drifter into a motor trawler? ——A 35 h.p. would cost about £800. In pre-war times you would get them for £400 or £500. There are Danish engines, Norwegian engines, English and Scotch engines of different types.

882. Do you know anything about mackerel curing?——I follow the mackerel season all round, but I don't cure them. They cure them round by Baltimore—the local men. Of course, it depends on the price of fish. Fish must be rather cheap before you can cure them.

883. Do you know what the capital cost would be to establish a Curing Station? Let me put it this way. In a fishing district, where there was a normal market for a normal quantity by rail, there came heavy fishing, and you wanted an outlet. That outlet should be a Curing Station. You would require a certain number of vats, knives, salt, and various appliances. What would it cost to establish a Curing Station in that form? I mean the actual first cost to put down a quantity of tubs, salt, and so on?——Your barrel would cost 16/-.

884. Is that the present price?——Yes. I cure herrings at Howth. They cost me 26/- a barrel to cure, and in pre-war time it was 9/- or 10/-. If you employ girls, you have got to pay them their wages, whether they work or not. Then you pay them so much a barrel for what they do. If you are waiting for fish, you can understand there will be an accumulation of labour, so that your first curing may cost you 35/-.

885. I am not thinking of waiting labour. I am thinking of waiting material.——When you come then to look for your labour, where are you going to get it, unless you educate the local people into doing it. In herring-curing you have to get your girls from Scotland and the North of Ireland. With a bit or luck you might keep them going every day for two months. Sometimes you would have a fortnight's idleness, and there would be an accumulation of labour charges.

886. Do you know anything about the Irish market for fish?——It is fairly well worked. At recognised seasons around the coast, you can quite understand it is not the local buyers. Buyers come from the North of Ireland, and, as a matter of fact, there are some representatives of English markets here at the present time. They came over during the war and stayed here.

887. Where the fish is, the buyers are?——Yes. A big lot of fish goes to the inland markets of Ireland.

888. I think it is agreed, generally, that Ireland is a bad fish country?——It has improved since the war. Dublin's capacity for fish has improved a lot, anyhow.

889. Have you any suggestions as to a possible way of increasing the taste for fish in Ireland?——I would say why fish is, at present, consumed in Ireland is, the dearness of other commodities. I remember, some years ago,

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when there would be a good demand for herrings, it would mean that eggs were not procurable. When eggs would get cheap, herrings would get cheap.

890. I don't think there are many kippers consumed in Ireland?——It seems to have come on a lot lately. There are a lot of them done now.

891. I am wondering whether there could be developed a system to make them very appetising and encourage the consumption of them in this country?——I don't think fishermen would fish very long if the sales were confined to Ireland. The transit facilities of Ireland are very poor. In fact, I had a lot of stuff condemned this year by delays.

892. That is to England?——Both Ireland and England. I sent kippers last Friday from Howth, and they happened to reach Liverpool well.

893. From your general experience of the trade, you will agree that the whole trade, from the time the fisherman goes out to the time the salesman sells, is a risk from beginning to end—a gamble.——It is purely and simply a gamble. If the buyer loses, the fisherman, naturally, will have to pay for it the next day.

894. There is no certainty about it—all the preparations you make for a year beforehand may result in nothing.——May result in nothing.

895. The establishment of better transport facilities and the provision of salt and ice may entail an expenditure of many thousands of pounds, and, if there was no fishing, that expenditure would be lost?——That is right.

896. Even the labour of men may result in failure, no matter how hard they work?——That is a fact.

897. It is a gamble from beginning to end?——Yes.

898. Would you agree, as a consequence of that, that it is essential that there should be something in the nature of National Insurance or National Risk—that the whole country should take that risk, in some way, because of the nature of the trade?——I wouldn't be in favour of any outside help. I would leave it to individual initiative, as a buyer, when the buyer is prepared to take a gamble on the trade. Although I am connected with boats, I say there should be no help, except to the fisherman. There are a lot of people in the fish trade as buyers who are actually not depending on it. Very few of them put back the money they have got out of the trade back again into it. If you want to subsidise people like that, the quality of the fish must be considered. If you had to subsidise curing, for instance, you would want to have proper inspection to show that they are curing the right class of fish. If you send fish away from this country that doesn't bear comparison in America or on the Continent, you are not doing any good for the trade.

899. I want to suggest that because of the gambling nature of the trade, and gambling from natural causes, it is a risk from beginning to end?——Yes.

900. A fisherman may be lucky, but it is just as likely that he may not be lucky?——Yes.

901. That element suggests to me it is a risk that should be taken by the nation, as a whole—that there should be some real system of organisation of the whole trade, and the risk be spread.——You say the fisherman is not lucky. Of course, the element of human nature comes in that way. When you consider a fisherman is not lucky, a lot of it has to do with himself. Some fishermen have the name of being called eager fishermen. Other men, when they get a catch, don't bother working for half the next week.

902. Have you any remarks to make about fishermen in a number of ports who, even though they follow nothing but fish, are less adventurous than they ought to be, and not willing to go a distance to follow fish?——In most parts there are fishermen who get the name of being eager fishermen. You will often hear: "Why aren't you out?" and "Oh, it is too wild," and the men who go out get a good catch.

903. Are you in favour of a brand similar to the Crown Brand in Scotland?——I would.

904. On what grounds would you favour it?——On the grounds that if you get a bad name for cured fish on the Continental markets, it injures the people who send the right stuff. The curer, the man who confines himself to curing, knows his market. There are a lot of people who, when a glut comes, only start curing. Then they don't put it up in the right way. In fact, there was stuff cured in Howth this year that was condemned after a month or so.

905. It requires constant inspection?——Yes.

906. That can only be available at an established Curing Station?——An Inspector visits all the stations around. They would Crown-Brand herrings if proper inspection is guaranteed.

907. *Father Farragher.* With regard to the brand, wouldn't you think they ought to be graded also?——Yes.

908. Do you think the market for cured fish will ever come to anything decent until that is adopted?——It cannot possibly, unless there is a regular Brand.

909. That is what is ruining the market in America, you know?——I know it is. I had stuff in Glasgow for America. When they saw "Glasgow —Howth Brand" they wouldn't touch it, because of stuff from another man.

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910. There has been a good deal said about curing. As things are at present, do you think any man would cure mackerel, if he could get a fresh market for it ——No.

911. You said there are some who don't start curing unless there is a glut?——Yes. No man sets out deliberately to cure. He would want to have plenty of pluck to do it.

912. There is no buyer now, as things are at present, that will cure, until he finds that the fresh market is not able to meet the supplies. In other words, cured fish will not return the same price as fresh fish?——No.

913. About the insurance of boats, I suggested to the Agricultural Department, and to the Congested Districts Board, some years ago, that they should have insurance for all the Irish boats. Wouldn't you think they would require to have subsidies as a kind of guarantee?——They would; also insurance for the lives of the fishermen. When an accident happens the hat goes around.

914. You stated that if an application was made for a boat, the applicant had to take whatever he got—whatever type. Is that true, in the East Coast of Ireland?——I wouldn't say he would have to take whatever type, but, unfortunately, when a fisherman gets a loan for a boat, in my view, he doesn't consider the total cost at all. He is so anxious to get the boat, that he doesn't go about looking for the right class or type of boat.

915. About Cape Clear and Baltimore it is a very big complaint, at present, that they don't get them. What price did they average last Spring for mackerel?——I would say that they would average about 18/- or 19/-. They were 24/- a cwt. there to-day. Sometimes they went down to 5/- and 6/-. Of course, during the war, they were up to 40/- a cwt.

916. Of course, transit is impossible, you know?——You want ice.

917. They are getting an ice plant in Baltimore, aren't they ?——They started last year, but there is no sign of it being erected. There is a small ice plant in Cork. In Waterford they turn out about five or six tons a day. I have to get ice from Belfast.

Colonel Moore in the Chair.

918. How many motor-boats have they in Howth?——They have about six motor-boats.

919. What size are they? What length are they in the keel, about 30 feet?——They are more. They are very large boats.

920. What length of keel?——35 and "Henry" 52.

921. Any man who has a boat, and wants to live by it by fishing, he must have a motor?——Yes.

922. Have you herrings on hand still?——About 300 or 400 barrels in Howth, and about 1,100 halves in Glasgow.

923. I suppose you have to grade these also?——They are all graded. And the Government guarantee to the English curers has nothing to do with this country.

924. Of course, there was no one in this country to look after them.——No.

925. *Colonel Moore.* Hadn't the curers to adopt a brand of their own?——Yes.

926. Nobody uses it but yourself?——No.

927. Have you established a name for yourself?——Yes. The Commission Agent I had, used to come over direct and examine all his stuff before he would buy.

928. Would you mind telling us where that gentleman came from?——From Germany.

929. *John Murphy.* When fish goes bad in transit, who suffers the loss when it is condemned? Do the railway companies take the risk?——No, none whatever. The merchant has just to pay the freight on it.

930. They don't even refund you the freight?——I have put in several claims. The fish is consigned at owner's risk. The only chance you have of claiming is if they don't deliver it at all—if it goes astray. That often happens.

931. Relatively, is the fishing worked on better lines in Scotland than in Ireland. Is it more productive to the men engaged in the trade?——It is, of course.

932. Is that due to the efficiency shown in Scotland? Do they get any outside help, or is it due to the methods they adopt?——The banks of Scotland, some years ago, were very heavily hit by the failure of fishing. Years ago they financed the fishermen; they bought them drifters, and all that sort of thing—some 15 or 16 years ago—and they were heavily hit by the failure of the fishing.

933. Do the Scotch fishermen come over here much? The Isle of Man men come down to Skerries?——Some years ago they did come to Balbriggan.

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934. Do they still come?——Not many; though I know it paid the local fishermen, if they had properly equipped boats.

935. Couldn't they avail of that particularly fruitful time in the trade, instead of allowing these Manx fishermen to reap a harvest?——They do increase, but there is plenty of room for it. In September, a lot of our boats go to the Isle of Man, when the herring goes into what they call the Douglas Bank.

936. I am not saying it myself, but I have heard it stated in Balbriggan, that the fishermen, when they have a couple of good nights, they really take it easy for the next three or four days, whereas the Manx fishermen keep at it night after night.——Unfortunately, that is so.

937. In Howth, is there any combination amongst the fishemen, or do they work individually?——They simply work individual boats. They generally put the fish up for auction. The fish-buyer is there during the season. In the winter season they go line-fishing, and when they get a catch they send it direct to the Dublin market.

938. Does the same condition prevail that the previous witness says prevails in Kilmore, that is, the first boat in is likely to get the top price?—— It depends on the supply. I have seen the first boat getting the bad price. Sometimes, when two or three boats come in with their catches, the buyers think there is to be an abundance, and the price may be bad.

939. But, as a general rule, which more often obtains?——The first man catches the early market trains for cross-channel.

940. Wouldn't it be better for the fishermen if they had some combination?——I think it would be impossible.

941. Of course, the men with the better equipped boats get the advantage?——They do, but it isn't the best equipped boats get the fish very often.

942. *John Sweeney.* Isn't it a fact that the reason that the Irish fishing is not more progressive is this, that the fishermen are not actually fishermen, and depending on fishing alone, but that they are partly farmers and partly fishermen?——With regard to the Arklow and the Howth men, their sole livelihood is fishing, but down about Cape Clear and Baltimore, and those places, most of them are farmers.

943. Do you remember that gentleman's evidence, previous to your own, in regard to Kilmore. Can you understand such a place where they cannot even cure the fish they catch?——I cannot, except I never heard a buyer anxious to go to Kilmore.

944. What puzzles me is, that when it is only four miles from a railway station.——If any local fish-buyer chooses to take the risk, it would, perhaps, be different, but I think he should want some other occupation—another way of livelihood than fishing. I am sure in that place there is a fairly good local consumption around. As it happens, even in Howth or Balbriggan, there are what we call cadgers who come along for the fish.

945. I suppose you didn't experience any difficulty this year in disposing of what is cured ?——I haven't disposed of it yet. I have had a communication from Germany saying they would be very glad to open up negotiations again, only that their Government would not give them a permit for imports.

946. There is another question. Don't you believe that the want of proper railway facilities here for carrying fish throughout Ireland, from one point to another—say from Howth to Sligo, or Galway—through the country wherever they are curing, is greatly against the fishing industry?——It is, of course.

947. Don't you believe, as a very experienced man in the business, if proper facilities were given for both the uncured and the cured markets, with the boats available at present, all the fish could be consumed in Ireland?——I would not say that, so far as the cured fish is concerned.

948. We are speaking of the herring and the mackerel trade. There are many towns in Ireland where you could sell ten barrels of herrings on a fair day, and twenty barrels would glut them.——I am talking of general consumption.

949. Is it not a fact that herrings caught around the coast of Ireland could be consumed in the country, if proper railway facilities were available? ——Well, of course, the railway facilities are such that we have no control over them.

950. Is it not a fact that you can, at present send a barrel of herrings cheaper to New York than to Clones ?——It is a fact. It cost me 9/- to get a barrel of herrings from Howth to London, and I have got herrings from Ardglass to Howth and the freight was 12/- a barrel.

952. Want of railway facilities and railway fares on a moderate scale is preventing the proper distribution of fish from Ireland?——Yes. I have even known fish to have been lying at the North Wall times out of number, while porter and other things have been sent across in preference to perishable articles, and finally the fish has had to be condemned.

953. *Colonel Moore.* You referred to boats not going out under certain conditions, is that to be attributable to want of proper craft, sufficient to stand

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the conditions?——In most cases. In fact, in these conditions, to which I referred, they go out at the risk of their lives.

954. And those who have proper equipment go out with very great profit to themselves?——That is a fact.

955. Then you would say that it is largely want of equipment to enable the fishermen to fish at all times of the year that accounts for the great disparity in the value of the fish caught on the Irish coast, as compared with England or Scotland?——We have a longer coast line than England or Scotland, and yet, as you know, there is a very small quantity of fish caught in Ireland, compared to what the Scotch and English fishermen get. That is caused by lack of equipment, which is a very great drawback.

956. Do you think you have a sufficient number of fishermen, if properly equipped, to fish fully all the water on the Irish Coast?——They would want to be properly equipped, and also they would want proper transport for the fish. In Cleggan, on the West coast, in Donegal Bay and Blacksod Bay, the Fleetwood trawlers fish, and a lot of that fish finds its way back into Ireland again.

957. They are really poachers?——Well, no. In Donegal Bay, about a month ago, there was a case of fishing inside the limit, but on the West Coast of Ireland there is abundance of fish, but there is no one to catch them.

958. With regard to the profit made from the fishing, I got, within this week, a prospectus from the Direct Fish Supply Co. It is beautifully got up, and there is a very instructive paragraph in it, giving the number of hands through which the fish passes before it reaches the consumer—I totted up fifteen hands. I know myself that when I was at the seaside in this country, and tried to get fish for breakfast, I had to wait until it came from a neighbouring town?——Yes.

959. And that fish had actually been caught within a stone's throw of where I was, and had gone to England and had come back to Ireland, and we were waiting for the carts to arrive before we could get it to eat?——Yes.

960. *Thomas Johnson.* With regard to the supplying of the British market, have there been any arrangements whereby the fishermen might get to know the price as well as the buyers?——There are some small places in Donegal, and elsewhere, from which the fishermen send the fish direct to Dublin.

961. But if there were a Central Organisation of any kind it could make arrangements to send out the prices ruling in the principal British markets, which might be of benefit to the fishermen?——It might cause a lot of dis-

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satisfaction. In some cases the fishermen do send round a wire, and in one case the fish was thrown back into the harbour, just because it was thought that the buyer was making too much out of it. Just a fortnight before that a large quantity of mackerel (£3,000 or £4,000 worth) was condemned in Dublin, and the buyer had to buy as cheaply as he could to get back what he had lost.

962. And the explanation is, gambling?——Yes, it is more of a gamble, and some fishermen would have a ring.

963. Do you know anything of rings?——I have often heard of an arrangement of prices, and often heard of their being upset by outsiders. Of course, in small outlying places, I think there would be a tendency towards that.

964. Do you know that it is a common practice for buyers to fix prices? ——It is very hard to get them to agree to it, and it would be almost impossible in a big port.

965. Take Kinsale twenty years ago?——Up to seven or eight years ago sale by auction was practically unknown on the South Coast. As a matter of fact, it was my father who started a sale about eight or nine years ago, and before that a fisherman would not know what he was getting for his fish until the end of the week.

966. Supposing there were a lot of fish, what would happen then?—— When there is a big catch of fish, even if the markets are good, it does not enhance the price of fish at all. In the main the supply at the port, in a lot of cases, rules the price, no matter what the market may be.

967. And you will also agree that the railway facilities might be easily choked in Kinsale or Baltimore, and that the remainder would be at the mercy of the buyer who happened to have facilities?——Yes; as a matter of fact, the arrangement this year was that they would only allow 600 boxes from Kinsale, and 800 from Baltimore.

968. Would you agree that the railway service is very insecure, and that it cannot be extended to meet an abnormal catch?——It cannot.

969. And to meet a big take shipping would be required?——Yes.

970. And that can only be made available where there is a sufficient amount of capital.——Yes; the line should be absolutely clear for the fish traffic, which should get a preference at the port here in Dublin. A man might make arrangements for a special train service through to the port, and, in some cases, he might not have two wagon loads to go along. During the

war, when there were submarines in the channel, we got more facilities than we do even now, because the fish was wanted at the other side.

971. Are the cargoes of ice coming to Ireland from Norway now?——No. In pre-war times a few big merchants would import ice, but the great drawback for the markets now is the difficulty in getting a supply of ice.

972. By the way, is there very much coopering in Ireland now?——Well, mostly in Belfast. I never get any barrels anywhere except Belfast.

EVIDENCE OF PETER McLOUGHLIN, U.D.C., Fisherman, Howth.

973. I am a fisherman, living at Howth, and am familiar with the fishing industry all along the coast. I am best acquainted with the herring and line fishing, and the facilities for landing fish. I have also some knowledge as to how these facilities ought to be improved. The loss, from lack of associated industries, such as barrel and box making, net making, ice producing plant, and lack of proper harbour accommodation, are the chief causes hindering industry at present.

We are very much handicapped for want of harbour accommodation. The harbour is all silted up, and there is only room for about half-a-dozen boats, and when the tide goes out there is no water. The harbour is there, but the Government will do nothing. They send an old dredger there every five years or so. She comes there to be repaired, and then when they are ready to dredge the harbour they take her away again. Howth is a Government harbour in the first instance.

In regard to the fishing, our fleet is very small. We have only about five or six motor-boats, and the rest are small sailing boats. The Fisheries Board have us handicapped, because they give all the money to Arklow. They gave £11,000 in one year. They gave nothing at all to Howth. If we want a net, or lines, or anything else, and apply to the Fisheries Board, the first question we get is whether we have got bail. Where is a fisherman going to get bail? In Scotland, one fisherman can go bail for another, and every man owns his own nets, and has a share in the boat. We here would have to get some big millionaire to go bail for us.

Regarding the price of fish, although I was listening to Mr. May's evidence, I would not like to side with him, because he is a buyer. Some time before the war we could buy nets for £5, and for the same quality now we

have to pay £20 or £22. Everything is treble the price, and we cannot get them in Ireland. We have to send to Scotland or England for them. We cannot get a ball of twine in Ireland. Money is going to England for everything. If we want ropes we have to send to Belfast for them, and they have Home Rule there all right. We have nothing at all in this part of the country.

Then, when we go out to get fish and bring it in, there is a ring of buyers, and that is the worst job of all. They make up prices the night before, when the fishermen are out, and then they talk of losing markets next day. Many a time I saw a faked telegram to blind the fishermen. They live in hotels, and all sorts of luxury, and don't care if the fishermen never comes back for a month. The fisherman has to pay for all that luxury.

You were talking about the ring. I can prove it myself. We came in with a lot of herrings one morning, and it was generally a local woman used to buy our herrings. She used to have to get boxes from the Salesmaster from Dublin, in order to send on the herrings to the Dublin market. She used to give us the highest price every morning. I sent her down with a sample, and said not to go too soon with it. The ring-rigging was going on, the prices being fixed in the St. Lawrence Hotel. My son came up and said: "I heard the ring telling the rest to give no more than 12/6." I told him not to be in a hurry selling. The price went to 14/-, and this woman came up and said: "I will give you 23/- a mease." Now, we always give the Salesmaster his commission, because we get paid through him on a Saturday. So when my son went over to tell the Salesmaster that he was after getting 23/- a mease, he said: "What did you give them to her for?" My son said: "Why would I not?" The next sale the price went to 32/-. When the woman went for the boxes, the Salesmaster would not give her the boxes, and we had to take down the samples again and sell them, and they brought 19/- a mease.

974. *Thomas Johnson.* You say you have six or eight boats at Howth?——There were about three or four large boats.

975. And you remember a time when there was a good many more?——I remember thirty or forty boats, and I remember several hundred in it at one time.

976. Of course, the Howth fishing was the main Irish fishing?——It was the main Irish fishing, and the Dublin Bay herring.

977. And it is not so now?——No, sir. They have now got the big steam trawlers. I have seen Norway herrings come into Dublin and be sold as Dublin Bay herrings out of the market. We are handicapped by having

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small boats, in which we cannot go out. We had big boats one time, and the fishing failed and we had to sell the boats. The Fisheries Board would not do anything for us to keep them on.

978. Do these boats belong to the fishermen or to owners?——Well, it is the fishermen who mostly own them. Through their industry, and the help of their friends, they buy them mostly themselves.

979. And on the failure of the fishing that you spoke of, they sold them? ——They did so, and when the nets got old they could not replace them, and they could not get help from anywhere.

980. Is there plentiful fish for the last couple of years?——Well, the fish is not half so plentiful as it used to be some years ago, but last summer was the most plentiful season for the last five or six years. During the war, although fish were not plentiful, prices were up, and we got the benefit. There was a lot of English buyers over here. Herrings were very plentiful during last summer, but there was not a fisherman who was not in debt. The prices came down last summer, and everything else was up—ropes, nets, sails, everything was up, and the price of the fish went down, and a lot of young fellows went away to foreign parts.

981. Did the Cornish fishing boats go away in debt?——No; they were well equipped, and that made a difference. Generally, they brought over a few of their own buyers from England, and they bought their own fish, and would not buy ours.

982. What about the mackerel fishing ?——We bring in a lot of mackerel in our herring nets. The English buyers come along and would buy these mackerel at small prices, but that would be no benefit to us, and we could get no one else to take them.

983. Do any of the Howth boats use mackerel nets?——They use only one or two of them. There used to be about twenty go out to Baltimore, and elsewhere, but there are only a couple of them now.

984. Do you know anything about the mackerel fishing on the South Coast?——Well, the mackerel fishing on the coast of Ireland would not pay during the last few years, because they did not get the price for them. We could get nothing like Cross-Channel prices here, and, at the same time, they sent all the fish to the English market.

985. Is there any suggestion by the Howth fishermen to do their own marketing?——Well, you want some outside help. You want a co-operative system and a Curing Station. Howth is a good centre for a Curing Station, because any fish unsold could always be cured and find a market. If we had

any amount of barrels we could send the cured herrings to the Continent, and they would be glad to get them in America as well, if there were vessels to take them.

986. Supposing you had a co-operative system, have you got women in the town who would be able to do the curing?——There are plenty of young women doing nothing. If Mr. May cannot get the women in Howth, he gets them from Kinsale, and elsewhere. But there are any amount of young women in Howth who only want to be taught the work.

987. Have you a boat yourself?——I have a little boat, and I have a motor in her. They call her the "*Nugget.*" I applied to the Fisheries Board, and they agreed, on my giving security, to lend me £200. The price of a motor would be £500. I had to buy the nets myself, and send the money to Scotland and England. We should be able to procure these things in Ireland.

988. What about line fishing?——We have a lot of small boats for line fishing, and a couple of large boats with motors, which also go in for line fishing, and go a long distance, and bring in a lot of fish, which are bought in the Dublin market. Sometimes the prices would not pay expenses, and at other times they get good prices. There are no big fish to be got in the summer time, so that the net fishing is best in summer.

989. Are there any bloaters made in Howth?——No, they are all kippers.

990. *Father Farragher.* What size boat have you?——She is only a small boat—about 35 feet.

991. The mackerel caught in these nets could not be cured ?—It would take about 300 mackerel for the box ?——They are not so small as what you think.

992. Would you be surprised to know that it is very rarely you get mackerel to fill a barrel with 300 fish?

993. *Thomas Johnson.* Are these mackerel cured?——Oh, no; they are salted. I know that in the summer time the English buyers ice the mackerel and send them away, but the Irish buyers despise them, although there are plenty of people in the country who cannot get fresh fish at all.

994. Have you any means of livelihood except fishing?——None in the world.

995. How many are fishing the boat?——Five out of the family, but I have only one of my own sons. We fish with another trawl, but the steam trawlers come in and take it away from us. They might as well come in and

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take trawl and all. Some of the Fleetwood boats are coming over and going inside the limit, where a little boat could not go in at all.

996. Did you report them?——Two or three reported them. There is a limit of five miles, and they go into three miles, and have all the fish destroyed. The small boats have to go out ten or twelve miles now to the limit of where these boats go. They have ploughed and torn the seed, and buried them away, so there is nothing for the small boats.

997. Does not your gear destroy the fish?——No, it is not so heavy. You might as well have a plough as these gears. I have seen two men, with navvy's shovels, shovelling the small immature fish overboard from one of these trawlers.

998. How far were you from them?——We went aboard her. They took the marketable fish away and shovelled the small fish away, dead.

999. What do you pay for nets now ?——For 100 yards of net, £20. Short nets would be about £15 or £16.

1000. Could you not get these nets in Baltimore?——It seems that they are only making them for their own people.

1001. Could you not get them in Lisburn?——You might as well go to England or Scotland, as to Lisburn or Ned Carson's country. We want our own co-operative stores and Curing Station, and we want to send our fish abroad, and have steamers to come for the herrings.

1002. How long have you got to pay back the loan from the Board?——Well, I got £200 for an engine, and I did not get half enough. I got it two years ago, last November, and I have until 1923. I have five years to pay it back. Before the money used to be lent at 2½%, but now it is 3½%.

1003. Supposing you got a loan to build boats, how many years would you get to repay it?——If I got £1,000, they might give me ten years to repay it.

1004. And how many years for the net?——Well, I think the net, boat and all, would be included in the one item, and that it would be about ten years. I never had any dealings with them that way.

1005. You should get a large boat?——But, where am I going to get it?

1006. Have you ever been round the South of Ireland?——Yes, I have been around by Skibbereen, and also around Donegal and Sligo. I was around the South Coast on a lobster expedition, and we got a lot, and we used to send the lobsters through Dublin. The price we got would not pay us. When we wanted a box of bait they charged us 10/- or 12/- for gurnet. I sent to Manchester and Liverpool and got double as good prices.

1007. You have no means of getting ice except through Belfast?——No. If ice was made in Howth it would be an advantage. My belief is, that if there was no one between the catcher and customer that the fisherman would get twice as much, and the consumer would get fish at half the price.

1008. Supposing there was a co-operative store, what means have you of distributing fish through the city of Dublin?——That would be a matter for the officials to organise.

1009. Would the tramway take any fish?——Yes. The railway people refused to let the Howth people bring fish in the train, and the Tramway Co. put on a service to bring the fish in. If it was not for the women coming out from Dublin to buy fish we would not get anything for it, and the Railway Company wanted to do away with the women coming out.

1010. Are they running trams for fish now ?——Yes; they are running trams every summer.

1011. Do the women buy much fish ?——Sometimes the women buy every bit of the fish coming into Howth.

1012. What is necessary is an organisation to take the whole of the fish? ——Yes; and then we want a good Curing Station to cure the fish, and put them in barrels and send them away.

1013. Of course, some of the men in the Dublin market are curers?—— Yes. I remember all these fish buyers, and some of them started with a basket selling from house to house, and now they are millionaires, and the fisherman that runs the risk of his life cannot get a living. There is so much talk about doing something for the fisherman, and so many promises, but when it comes to the point no one will come along and do anything. There are a lot of men come out to us and make speeches, and we never see them again. The fisherman has to be out every day in his boat, and you want independent people with capital to do all this.

1014. If you organise, you will get someone to invest money then?—— If a society or a club were started, the men would be only too willing to join it. They would all join, if there was any effort made for their benefit.

EVIDENCE OF CHRISTOPHER FARREN, Fisherman, Howth

1015. I have heard Mr. McLoughlin's evidence, and I agree with what he has said.

1016. *Thomas Johnson.* What, in your opinion, is required at Howth to assist the fishing industry?——They want better gear, and better boats; some-

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thing similar to what they have in Arklow. They have better gear in Arklow, and they are able to go out when we cannot go out at all.

1017. If the Howth men had boats properly fitted would they go farther afield?——Yes, they always went to Shetland and the Orkneys, the East Coast of Scotland, and everywhere else.

1018. In these better days that you look back upon, did the owners not accumulate funds to meet bad days?——We may not have looked before us like that. Mr. McLoughlin has told you about the buyers, and they get the fat of our business.

1019. Anyway, you agree with what Mr. McLoughlin said?——Yes.

1020. Howth Harbour was not originally made for fishing purposes?——It was not, and it was not put in the right place, as the water is too shallow there.

EVIDENCE OF JAMES DOYLE, Fisherman, Howth.

1021. I was doing the same class of fishing as Mr. McLoughlin, except trawling, and I can agree with everything that he said.

1022. *Thomas Johnson.* Do you think that the buyers make too much money out of it?——Yes, they are in a ring, and when the fish are plentiful they will give you nothing for them.

1023. Do you think that there has been any difference since the system of auctioning, that Mr. May spoke of, was introduced?——No, sir, I don't believe it, and he may say what he thinks. Any change that has been is against the fisherman, against the producer.

1024. But there are several auctioneers in Howth? Are they all buyers, and all curers?——Yes.

1025. And most of them boat owners?——Yes; and they get their fair share when the boat's divide is made out. But he would rather give us little for the fish, no matter how little he got for the boat.

1026. Sometimes the men may own the nets only, and not the boats?——Generally the man who owns the boat owns the nets. There are only three boats in Howth that can earn a living all the year round. The rest are practically not fit to go out on a winter's day. I have charge of a boat myself, but there is no motor in it, and the young men won't go out in such a boat. There are a lot of young men left the town, because they will not go out in sailing boats. There is a lot of expense about a motor-boat, but, at the same time,

you accumulate money out of it, because you can go out in a motor-boat when you cannot be out in a sailing boat.

1027. Does a motor-boat carry a special man, or an engineer?——You go through a course in the Technical Schools. There are some fellows sharper than others at picking up the tricks about it. If there were three or four good motor-boats in Howth there could be a good living got out of them in winter time in the long run.

1028. The boats now in Howth are line fishing?——Yes, and there are only two or three of them.

1029. And they sell in the Dublin market?——Yes, they send to the Salesmaster in Dublin. They do not combine to send the fish, as they send separately. They might send to two different Salesmasters.

1030. What size is your boat?——About 50 tons.

1031. Why don't you get an engine in her?——She belongs to an old woman whose husband died, and she does not want to go in for fishing any longer.

1032. Well, could you not buy it out, and could you not get a loan?——I don't know, I have never tried.

1033. *P. W. Kenny.* We had some evidence about the ring. Would not putting up the fish to auction, as has been stated here, would not that tend to break down the ring prices?——Well, they do put them up to auction. Mr. May is an auctioneer, and he sells fish, and might buy them, perhaps. I might be there and buy them for him.

1034. So that those putting the fish up for auction may be buyers or their representatives?——Exactly.

1035. *Colonel Moore.* When there is a glut of fish, have you sometimes to throw them away?——I have seen them thrown away, but not for the last few years.

EVIDENCE OF OWEN BISSETT, Fisherman, Ringsend.

1037. I fish in a trawler between Lambay and Bray Head. We originally got a small boat to fish Dublin Bay, between the Muglins and Howth. Then, when the illegal fishing came, we started to fish outside the Bay. In the winter time we find that the small boats are far too small. This last three weeks we have not been out twice.

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1038. *Thomas Johnson.* The weather is too bad?——Not if we had a decent boat. The men had a meeting the other night, and they wanted boats of 45 or 50 feet, that would be able to travel around the coast.

1039. Have you had any complaint from the net fishermen against trawling?——There was some friction about it.

1040. Have you had any objection from the line fishermen?——No, sir.

1041. Do you think there is any truth in the theory that trawl fishing destroys the fishing ground?——No, I think trawl fishing does the fishing ground good, because it leaves more food for the fish on the ground.

1042. Your trawl lies on the bottom?——Yes, and the ground must be smooth, or the net would be torn.

1043. What makes you think trawling benefits the fishing generally—you say that it starts up the food?——Well, there were bits of ground near Lambay, and there were no fish there when the trawler first started, but since we started trawling the fish have come there.

1044. Do you think that would apply to a steam trawler?——No, because the mesh that the steam trawler carries is too small. If a proper mesh was used I don't think it would do the fish any harm.

1045. It is a rope that drags along the ground?——Yes, and then the fish go into the bag, or they are swept up by the wings. If the mesh is big enough the fish can go out again.

1046. And it would take a lot of fishing to take in a herring?——Yes.

1047. What do you say about ring net fishing?——I have nothing to do with ring net fishing. I think it is destructive to the fish. It would be all right if they used a proper mesh.

1048. *Father Farragher.* Even if the mesh were pretty large, would not the large fish block the exit of the small fish after a short time?——I do not think that is probable.

1049. You will get small fish into the trawl of a small boat?——What I mean is that a steam trawler gets them in very large quantities.

1050. But they have larger boats?——Yes, and a smaller mesh. We never get more than two or three boxes of fish.

EVIDENCE OF MICHAEL MAGUIRE.

1051. *Thomas Johnson.* You know something about salmon fishing in the Liffey? Tell us what you know about it?——Well, there is one matter in reference to the sewerage outfall of the Corporation at the Pigeon House. I think that has had a great effect on the salmon since it was put there.

1052. How many men are affected by fishing?——In 1883 there were 17 boats fishing in the Liffey, ten men to each boat Then it dwindled to ten, and in about four or five years more it dwindled to six, and I think there were only four boats last year. It is through the salmon being so scarce, and people not able to buy them. You may hear that there are more nets now than formerly. That is quite true, but a net only employs two men now, and it is cheaper to buy these nets than to have ten men to each boat.

1053. What sort of a living do these boatmen get?——Well, the senior boatman only gets a miserable living. Of course, some years would be better than others. As a matter of fact, 1917 was a good year.

1054. *Colonel Moore.* How far up the river do you talk of?——We are not allowed to go more than half-a-mile from the River Dodder. We fish from the Coastguard Station to the Half-moon Battery.

1055. *Thomas Johnson.* What market do you sell in?——The Dublin market.

1056. You are dependent on the prices you get in Dublin?——Yes.

1057. Have you any suggestion to make for improving the fishing?——I don't think my suggestions would be carried out. First, I would do away with the weir at Islandbridge. Of course, there is no use in speaking of the Corporation outfall.

1058. What about Islandbridge?——It is a private fishery, owned by a gentleman who is not dependent on it, like the men at Ringsend.

1059. You think that if the private fishery were abolished it would benefit the fishermen?——Well, yes; because the fish would get to the spawning ground. The fish go up to spawn, and the weir catches a good deal of them before they get to the spawning ground.

EVIDENCE OF WILLIAM PURCELL, Fisherman, Ringsend.

1060. If you want to compete with craft from elsewhere, you must have a vessel of fifty tons, with two powerful engines, in order to be able to compete with any steam boats. I was the first to get a motor in Dublin, and now there are thirteen or fourteen of them. If you have two powerful motors, of 15 horse-power each, in a vessel of 50 tons, she is able to compete with steam, and should be far more cheaply worked.

1061. *Thomas Johnson.* Are you speaking of trawl work?——Steam trawlers I am talking about. A motor-boat would not take more than 600 gallons of fuel. If you get the difference in price between that and 40 or 50 tons of coal, you will find the motor-boat cheaper.

1062. How long is it since Ringsend was a prosperous fishing village?——Close on 20 years ago. The fishing began to dribble away from that time. I remember when 60 or 64 trawlers worked from the Muglins to the Bailey and they brought all the fish to the Dublin market.

1063. And you mean to say it began to decline from the time the steam trawling came in?——Yes.

1064. Was it the steam trawling destroyed the fish in Dublin Bay?——No, but they took all the fish away.

1065. How many men are there now in Ringsend?——They have nearly all died out of it, and many other fishermen have gone into other work.

1066. In the days you speak of, did the fishermen make fortunes?——Well, they made a good deal of money. I have made £20, £30 and £40 in a week, and several times I made it. A big vessel of 40 tons, with two powerful motors, would stand as much as any steam trawlers.

1067. *Colonel Moore.* How big is a steam trawler?——Up to 80 and 100 tons, and some of them are over that.

THIRD DAY.

DECEMBER 4th, 1919.

Present :

JOHN O'NEILL, *Chairman.*
THOMAS JOHNSON, *Chairman Food Committee.*
DAVID FAGAN.
REV. M. FARRAGHER, P.P.
P. W. KENNY.
COLONEL MAURICE MOORE, C.B.
JOHN MURPHY.
ROGER SWEETMAN, T.D.

DARRELL FIGGIS, *Secretary.*

EVIDENCE OF REV. M. FARRAGHER, P.P., Arran Islands.

The Rev. M. Farragher then went into the witness chair.

1068. *Chairman.* Father Farragher, you heard the evidence that was given before the *Commission* at its sitting yesterday, from the fishermen and others, concerning the conditions of fishermen, and we would like to hear from you what you have got to say on the subject.——Mr. Chairman, and gentlemen, I have no written statement to hand in, nor do I propose to make anything like a speech. I think the best way would be to give you my experience of the fishing trade along the coast for the last twenty years, and of the attempts made, with success or otherwise, to develop the industry.

1069. Perhaps, if we take it in a kind of separate order, beginning with the condition of fishermen, it would be more beneficial?——As they are at present, or as they were?

1070. Their present and previous condition, and whether there has been an improvement or a falling back?——I am conversant with the Western seabord, particularly Arran Island and Galway Coast, and the conditions would be the same all round the coast, to a certain extent. You will find in the history of the fishing industry that Ireland was far before Scotland. It was only in 1854 they started in Scotland, when Irishmen went over and taught them. My first experience in the island was in 1887. At that time their condition was one of poverty and chronic starvation. There are gentlemen here at present who have seen appeals to the public to relieve that state of chronic starvation in the West. In 1882 there were three or four French sailing boats driven in there for shelter, and they were laden with mackerel.

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The then parish priest took advantage of this, and made representations with a view to having a fishing industry started there. Some people living had seen prosperous fishing, not alone in Aran, but along the Western seaboard. The Bishop of Galway and himself supplied boats as an experiment, but owing to a want of means of marketing the fish, the experiment fell through, and the boats were sent down to Baltimore, where, at the time, the fishing industry was started by Father Davis. That fishing industry was developed without any assistance from the Government. Later on, I think in 1890, owing to the repeated and persistent representations of the parish priest, the Government was induced to join with the R.D.S., and they sent a Commission of Inquiry along the West Coast to ascertain if fish was to be found there, and if the project of a fishing industry could be economically developed and made successful. They found ova there, and that sort of thing, and they made representations that it was a feasible project, but it would take some time and expense.

Mr. Green, who was there, got a kind of *carte blanche*. I suggested to him, in order to induce people to follow this industry, that with the equipment that might be got, he should demonstrate that there was money in it. I suggested to him to get strangers accustomed to fishing to come in, and if the people saw the fish they would fall in. He succeeded in negotiating with a fleet of boats from Arklow, and he arranged to give them a bounty and guarantee. He approached the Midland Railway Co. with a view to giving special terms for the fish, and he also got ice from Norway. That was in the year 1891. The Railway Co. then, after all that had been done, came back and said they could not carry out the contract, and the whole thing was knocked over. Next year the Company saw their mistake. It was in 1882 the first fleet came there. Galway, in the meantime, had arranged with the Galway Steam Co. to take the fish from the Island. In the meantime I had left, but afterwards Mr. Green told me when the Aran men saw the boats they scoffed at the idea of being able to get any fish. After ten days they came in one morning laden with fish, and then they tumbled over each other to take up the fishing. The Congested Districts Board took over the fish, and they marketed it themselves. In three days mackerel was at a fancy price in England. The officials engaged by the Board thought they had a very nice position, and they neglected to market the fish as promptly as they might. The fancy prices of mackerel disappeared to an extent, with the result that, after a very successful few years—years so successful that large buyers were induced to come in—the fishing industry failed.

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1071. In your opinion, the primary cause of the failure was the neglect of the officials to move with the times?——Yes; the fact of the matter is, that the Congested Districts Board is an Agricultural Department. They never took the slightest trouble to find whether the people understood the marketing of fish and looked after their boats, and, of course, the people in the West did not understand the absolute necessity of looking after the nets carefully. There was no advice given on these matters. They advanced the money, and demanded the instalments, and did nothing else. They have any amount of Inspectors, who go about doing very little. In 1897 I came back there as Parish Priest. I had been away from 1891 to 1897. Of course, I was very gratified to see there was something in the semblance of industry. At that time there were twelve or fourteen boats, and people who had been steeped in the direst poverty were in comfortable circumstances. Those who had no land at all were best off, and the fishing was the means of helping, not only those engaged in it, but every individual in the Island. Before the fishing came kelp was manufactured there, and each landholder was entitled to a certain portion of kelp, according to the extent of his land. When the fishing came, and it was found more remunerative, instead of being used by three or four men, one man got their share of it as well as his own, and helped all round, even those not engaged in the fishing.

1072. Those engaged in the fishing made way on the land for those left behind ?——Yes, and those who had neither land nor kelp had to be employed, not only in helping to market the fish, but also to do agricultural labour for the men engaged in the fishing. When I knew them first they were in a chronic state of starvation, and when I went there as Parish Priest the whole place was revolutionised practically by the fishing. Then there was a boat-building yard established there, superintended by a Scotchman. The Board Report says the boat-building was discontinued on account of some apprentices going to America. What happened was, that the Scotchman in charge died, unfortunately. I suggested that the foreman, who was an Irishman, should be continued on, but that was not done, and the boat-yard was closed.

1073. *Colonel Moore.* Why was the boat-yard closed?——Well, the instructor died.

1074. And the foreman was no good?—— He was a fairly good man, but he got no chance. They would not encourage Irishmen. In addition to giving boats to the crew they gave instruction in fish-curing. Fishing was then altogether confined to Spring mackerel fishing and the Autumn fishing. Prices deteriorated very much, the crew went into arrears, and the Board

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was clamouring for the instalments. The Inspector of Fisheries, representing the Congested Board, being a man reared as he was, was not a practical man of business. He was a kind, good man, anxious to help the people, no doubt about it, but his officers did not seem to take much interest in it, and the result was that fishing went down considerably. That was due principally to the falling away of the prices of mackerel, owing to the introduction of steam trawling in England and Scotland, and fresh fish were landed in great quantities by these trawlers every day in the week. Scarcely anything was done in that way in the Co. Galway during that time, except that a few boats were built and given to Roundstone. In former times the tradition is, that Roundstone was one of the most successful fishing stations on the Western seaboard. In 1881 there was no such thing as fishing, and they do little now. The reason is, that the boats, for the most part, were given to shopkeepers.

1075. *Chairman.* Was the reason that they were better security?——That might be it. It was no inducement for men to go fishing in shopkeepers' boats, as they never had the handling of money practically. The men were always in the shopkeepers' hands. The accounts were all kept by the shopkeeper, and the man who went fishing did not know what was the profit or loss. He simply had to take what he got and be thankful.

1076. There was no incentive to work?——No incentive to develop the industry in that part of the country. The general complaint is the lack of markets and marketing facilities. That has been exceptionally so during the war. When I first made the acquaintance of the Aran Islands there was no steam communication at all, and no telegraph communication. We were cut away from the whole world. When they decided to develop the fishing they had a little steamer in Galway, and they subsidised that to the extent of £700 a year, on the condition that they would build a new steamer. And there was a telegraph station. My idea about the conveyance of the fish to Galway was, that a steamer, with headquarters in Galway, could not meet the requirements of the fishing industry in Arran. If we had fish on a morning, we would telegraph, but, owing to the tidal harbour, the steamer might not get in as required.

1077. The fish were not so accommodating as to meet the requirements of the steamer?——That is so still. Last week, and the week before, we had considerable quantities of fish. We had to cure some of it, although the market was very good. During the war, owing to the shortage of coal, they reduced the number of trips, with the result that we have practically only one service now.

1078. The whole difficulty would be obviated if the steamer made its headquarters in Arran?——Certainly it would.

1079. It would make no difference to the owners?——The crew live in Galway. At present there is no trade in Galway. Formerly they would make a good deal in tonnage, and sometimes, I suppose, they made £1,000 in salvage.

1080. I take it that in the case of tonnage, they would have notice several days previously?——Yes.

1081. That is, their headquarters in Arran would not cause them any undue difficulty in the matter of tonnage?——Not the slightest. Now, a great many of those so-called experts gave as a reason why the development of fishing in the West—and, I suppose, the same all over the Irish coast—should not be entered into to any great extent was, that the fish had deserted the coast. That is absolutely untrue.

You have, at present, what I regard as two great requisites to the fishing industry. You have fish in abundance about the coast. That canot be gainsaid. We sent off 250 boxes of fresh mackerel on Saturday, and we sold 250 barrels to America by cable on Monday last.

Then another requisite is the men. You have, I am glad to say, a very fine population, not alone in Arran, but also along the whole coast, and they are nearly all thoroughly well-trained sailors, but not trained fishermen. Give them the appliances, and then secure that the fish is disposed of to the greatest advantage to them, and there is no reason in the world why you would not have the most prosperous fishing industry along the Western seabord. They tried down about Blacksod Bay a few years ago, and from what I learn about it, you had material there for a successful fishing industry, if properly carried out.

Sailing boats are behind the times. I was, for a number of years, an advocate of the installation of motor engines in these fishing boats. I was invariably met by two reasons against them. One was that the reliability of motor-boats was not at all an appreciable quantity. Now, I suppose, that cannot be said. I was also told that introducing motor engines into boats would be an inducement to emigration. That I met by saying that it would be quite the other way. The more opportunities people have to live at home the less the inducement there will be for emigration.

Well, these two arguments were put forward by the representatives of the Congested Districts Board. I found in Donegal they were getting them in as quickly as possible, and steam drifters also. If you examine the position

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of the Congested Districts Board you will easily see why Donegal is specially favoured. I induced the Board to make a loan for a motor engine, and it will illustrate the methods of the Board. In 1914 I succeeded in getting the Board to make a grant for a loan to provide a motor engine. This boat was mentioned by one witness here yesterday. The boat was built in Arklow, and was fishing in Arklow, and then migrated to Galway. One of my parishioners succeeded in getting a loan to purchase that boat. He was a very good man, and I was anxious to induce the Board to give a motor to this man. They agreed, and I then suggested the first thing to be done before installing a motor in the boat, was to have the boat examined by a competent man—an expert—to ascertain if it was a reliable boat in which to have an engine installed. The Board agreed with that, and they sent their expert carpenter there from Donegal, and he said the boat was all right. I was anxious that the installation should take place locally, so that the man would be instructed. The carpenter said that would be inconvenient, and so then I said, send it on to Galway, and I will send down our men. No use; the boat should be brought down to Donegal. Now, Galway Bay is a long way from Donegal, and in the winter season the winds and weather are not reliable or agreeable. I pressed that point, but it was no use. They said they would put the Seamus Maille out. They said it would only take a week. I said the boat was not so large, and it would take, at least, a week to prepare the boat for the carpenters. The Seamus Maille came along and was ten days lying in the roads, and could not touch the boat, the weather was so bad. It was six weeks from the time the men gave up fishing until the boat was landed in Donegal.

1082. I happen to know some little thing about mechanics. If a proper mechanic was sent out, he could do this job, if he wanted to do it. If it was wanted to be done it could be done.——That is the way officialism goes. When the boat got to Donegal it was the time the Donegal boats were starting for the fishing. I wired to the Board, and they sent down a man specially, and he began to tinker with it. It was nearly three months from the time the boat left Arran until it was ready, and, in the meantime, the fishing was going on. Then the night before he went away he was to be shown the place to leave the boat, and the boat fell out during the night and filled with water. The owner of the boat, after six weeks or two months, left for Howth £20 in debt. I lent him the money to pay his debt. I protested against this, and the result was not at all acceptable to the persons responsible, who did not like to hear the thing discussed. When that man came back, after November, they came for an instalment. His wife and family had to live on 5/- a day, and he had

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to pay for his lodgings. I came to Dublin and met a man in the Congested Districts Board, and explained the thing to him, with the result that he got time. They were going to take the boat from him. That man has been fishing since, and he is now prosperous.

1083. If he hadn't the money that time he would have been wiped out, not through his own fault or incompetence, but through that of officials?——That is so. There are now many boats. I have one myself, but it is not in the Board's list. There are five or six now. During the war various applications were made, at different times, for loans to instal other motors, and the answer was, to wait until the war was over. A golden opportunity was lost, for, during the war, any man with a boat was bound to make money. One of the great difficulties we have to contend with is, that this steamer has raised the freights to such an extent that it is almost impossible to do anything. 6d. a box was the charge from Arran to Galway, now it is 2/6, and 5d. on each of the empties returned. It costs 4/- to market 1 cwt. of mackerel, and then there are the empties, 6d. more. It costs that between Galway and Arran, and it costs only 3/- to Dublin, I think.

1084. How much fish do you put into a box?——90.

1085. And the freight on 90 fish comes to 4/-?——No, 120 costs 4/-.

1086. Would there be any solution of the problem?——My idea is, you could get a less expensive steamer. I was going to apply to the Board on the matter, but I have incurred their displeasure too much by criticism. It would suit if we had a large motor-boat that would be able to take 300 or 400 boxes at a time. In the event of exceptional trade, motor-lorries could also be used, as the road is steam-rolled. If fishing was developed, of course, the fleet would necessarily increase very much more. My suggestion would be to make Arran the headquarters from Slyne Head to Galway, and, on the other side, Cleggan. Fishing could be developed along the coast there. I know there are little spots, here and there, where shopkeepers and others tried to introduce fishing. My conviction is, you must centralise as far as possible. As far as the harbour is concerned there is ample accommodation. If the boats run in, there is magnificent anchorage, and a motor-boat can hold on. I consider the construction of harbours a secondary thing. Get the fish first, and then make provisions for the marketing of the fish, and after that look after the harbour accommodation. If you have successful fishing, there is no reason why you should not be able to make a harbour by supplementing whatever grant came from the County, or any other place, by a levy on the fishermen.

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1087. Would you make the fishermen contribute their fair share?——I do not think they would feel it. There is no reason, if they have the advantage, why they should not.

1088. *Colonel Moore.* What is the size of the steamer?——About 70 or 80 tons.

1089. *Chairman.* Would there be any chance of combined action by all these small little spots to get one of these big boats, on the co-operative system, more or less, not in Arran only, but in all the rest of the places?——That is the very thing I am advocating.

1090. I would like, if possible, to go into that subject—the possibility, by combined action, of making fishing independent of the steamship companies? ——What I was going to suggest to the Board was, that if they lent us £15,000, that our Society would provide a steamer or motor-boat, so that we would be able to market the fish from the whole coast from Slyne Head to Galway. With motor-boats it is no trouble for them to go into any harbour they like.

1091. I am more or less anxious to know what would the possibilities be of a similar Society to your own being established on the mainland, and working in conjunction with you?——No difficulty. In fact, I was advocating it. They were actually contemplating that last year. The thing fell through owing to interested parties on the mainland.

1092. What rate of interest do the Board charge at present?——2½%.

1093. Even during the war period?——Yes.

1094. I think you will find it very hard now to get them to advance?—— They have not advanced any money of consequence to Arran during the war. You may see so many Loans to Galway after a certain period, but they average only £10.

1095. Only what they would get from any shopkeeper in Galway?——Yes.

1096. Would it be possible, failing getting money from the Board, to make any reasonable proposition to capitalists to invest that money?——I think capitalists would hardly invest it at 2½%.

1087. Perhaps there are other conditions. I understand you are compelled to insure the boats in a certain manner?——All motor-boats have to be insured. I objected to the insurance being for Great Britain. I wanted the insurance to be for all Ireland. There are sufficient boats to make a fair insurance company. Now, I have a return here which shows the value of sea fish landed in the Congested Districts area during the year 1914. The mackerel landed in Donegal was valued at £1,262, the quantity being 7,712 cwts. In

Cork the value was £17,423, and the quantity 63,781 cwts. In Kerry the value was £30,064, and the quantity 88,615 swts. In Clare the quantity landed was 2,432 cwts., and the value £1,090. In Galway 17,206 cwts., value £5,234; Mayo 1,247 cwts., value £483; Sligo 600 cwts, value £120. The total quantity, for all these counties, was 181,593 cwts., value £55,679. The Fishing Industry is a great asset to Ireland. When the prices went down the merchants withdrew, because the quantity was not there, with the result that the fishermen were left at the mercy of the local buyers.

1098. You mean that there was no inducement to catch the fish?——Yes, besides that they began to divide the boats. They went somewhere else, and it was not worth people's while to follow them around.

1099. *Thomas Johnson.* Can you explain why they go to Roundstone. Is there a market there?——Of course, the shopkeepers of the locality would rather have them there. The shopkeepers could determine where to have their fish.

1100. The shopkeeper at Roundstone would not be the man who marketed the fish?——No, it was marketed by the Board.

1101. *Chairman.* I take it the shopkeeper was more interested in the boats coming back with the proceeds, and did not mind as long as he got his share?——I believe myself they have no interest in the improvement of the condition of the people.

1102. *P. W. Kenny.* The value you have given is actually the value received from the English market?——Yes.

1103. Of course, that would be a far different thing to what prevails around the coast where buyers only give what they like to the fishermen ?——Yes, that is quite so; but the marketing of the fish by the Board gets so expensive that the men's remuneration is very little sometimes. I have known them to get 6d. for a little box of fish. That would not induce any man to go fishing.

1104. *Chairman.* We would like to hear what you have done yourself? ——I was more than an interested spectator. In my own parish, at least it appeared to me, that the condition of things as they were, and their tendency, would be fatal to the improvement of the condition of the people, because, if the fishing industry fell away they would have to go back to their original condition, or perhaps worse. That was not due to the value of the fish not being quite sufficient to enable them to have a decent living, but it was due to the fact that they were at the mercy of the buyers. I have seen them selling at 2/6 a cwt. When there was any quantity they would only take a certain proportion of it. I need not say that I regarded the establishment of a Co-

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operative Society against these buyers as a thing that would not bring me more into favour. There are a great many things to be considered and done, and, in the circumstances, I said that I was prepared to make sacrifices. Before that, in the American market, they were selling fish at 56/- a barrel. Out of that 56/- the fishermen were getting 10/-, and the buyer had 28/- net profit. I am sure there is no necessity for me to labour the iniquity of such proceedings as that. Strange to say, the Board were in the swim, because sometime before this they were trying experiments with a view to inducing buyers to cure fish after the Norwegian fashion. The Board was curing fish also in limited stations, with a view to giving a demonstration, or object lesson. They were selling the fish and not giving the men one penny more.

1105. I can quite understand. They were doing it in a small scale, in an experimental manner, and they might have proved to their own satisfaction that they were not profiteering.——They got 4/6 a barrel more, and they shared in the profits the buyers were making. I twitted them with that, and Mr. Micks said I was not right, though reports showed that they were making 16/6 per barrel profit. I said, you are buying fish in Baltimore and Cleggan, and paying 7/- and 9/-, and in Arran 4/-, so he was calculating on what he was paying on the average, and not on what he was paying in Arran. I said, if I had the money, I would form a Co-operative Society. He asked me if I would associate myself with the Co-operative Society. I said, yes. I induced the fishermen to give their fish and wait for payment until the fish was sold. The Board gave us the Plant at a valuation, and they also agreed to advance to our Committee the working expenses. I met Sir Horace Plunkett, Mr. Anderson, and Mr. Micks, and we formulated rules, and started fishing on co-operative lines. The first thing was to look out for a capable man to superintend. I succeeded in getting an expert in the curing of fish. He is our Manager also, and Secretary of the Society. In 1915 £150 was borrowed from the Board. It took us a long time to get the money.

1106. *Thomas Johnson.* Could you give us, in a lump sum, the actual expenditure?——We rented the curing station, and they gave us the Plant at a valuation. The Plant they had at the time would not be outside £100. I have the statistics here. For the first year, from the period 18/7/15 to 6/4/16, the fish bought was 426 cwts., wages paid £118 12. 8d.; share-capital £26 18. 0d. Every member of the Society had to take a share, and had to pay a shilling to commence with; profit £98 18s. 2d. Next year we bought 4,495 cwts., paid in wages £507, and the share-capital was £70 7s. 0d., and profit £613. In 1917 we bought 12,366 cwts., paid in wages

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£1,139, share-capital £49; profit £611. In 1918 we bought 22,219 cwts., paid in wages £2,681, share-capital £1 18s. 0d., profit £709. The total was for the whole period, £39,508 7s. 4d.; paid in wages, £4,446 10s. 6d.; share-capital, £148 16s. 0d.; profit, £2,028 2s. 0d. These are the figures as given by the auditors. It was for the canoe owners I first started the Society. We paid them at the rate of 12/- or 13/- a cwt. Not alone did we pay them for the fish, but we procured for them a fishing crew. If a man lost his net or his canoe, if he made application to the Board, it would take him three months to get nets. What we did in canoe-fishing was, we wired to Galway for nets, and got them in a week. We gave them the means of earning their own livelihood and charged no interest. It was a great matter for them. When this object lesson was understood, the men in the big boats began to say to themselves, "this is not a bad thing at all." Organisers and Inspectors were urging me to go here and there to get them to come in. I said, we have made a small start and we will stick to it, and we will wait until these men come to me. Some of the rules were a little irksome, and some of them did sell and violate the rules. What we did was to fine them, and not take fish unless they paid the fine. I had conversations with various priests and people in the mainland in connection with the Co-operative Society, and they were all urging me to introduce Co-operation on the mainland, but I thought that outside my province. The Bishop of Galway, and others, were anxious to improve the condition of the people, especially of the fishermen of Galway. In Galway the fishing industry is almost gone, but when I was a boy the Bay was black with boats. The boats they have now are the same as one hundred years ago, and there is not so many of them. Around Galway, when the fishing was not good, the young men went and joined the Naval Reserve, and that did not tend to their improvement as good fishermen or men, and when the war came they were nearly all wiped out.

1107. *Chairman.* On that point, men who were in the Naval Reserve, and who have come back to their districts in Great Britain are having something done for them. Is anything being done for the Galway Reserve?——No, they are loafing around and paid for it.

1108. I mean is an endeavour being made to enable them to earn their own livelihood?——They have built a shed for boat-building there, and they have a carpenter, mechanic, and engineer to instruct them in motors, but they have commenced at the wrong end. They have got to get the boats first. In my opinion, there is no need for instruction in motor-driving at all. Some of our best drivers are those who never went to any place at all for instruction. You

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would be amazed, as I have been, to go and look at a little lad going about, with can in hand, attending to the engine. He knows the intricates of all these engines as well as possible. The Bishop of Galway communicated with the Archbishop of Tuam, and they communicated with the Under-Secretary and the Board, with the result that it was thought best to have a consultation. The meeting was convened at the Most Rev. Dr. O'Dea's house. This is the report of our meeting, compiled by Mr. Micks:—

NOTES OF A CONSULTATION

As to the future development of the Connemara Fisheries, between the Archbishop of Tuam, the Bishop of Galway, and some of the Clergy of the Diocese of Galway, with some members of the Congested Districts Board.

13th February, 1919.

It had been arranged with the C.D.B. by the Most Rev. Dr. O'Dea, Bishop of Galway, that a Conference should be held for considering what steps would be most desirable with the object of further developing the Fishing Industry on the Connemara Coast and the Claddagh; and accordingly a meeting took place on the 13th February at his Lordship's residence, Mount St. Mary, Galway, at which were present:—His Grace, Most Rev. Dr. Gilmartin, Archbishop of Tuam (presiding); Most Rev. Dr. O'Dea, Bishop of Galway; Rev. Murtagh Farragher, P.P., Arran Islands; Rev. A. J. Considine, P.P., Galway; Rev. Peter Davis, P.P., The Claddagh; Rev. T. E. McElinney, P.P., Spiddal (Galway); James McMahon, Esq., Under Secretary for Ireland; The Very Rev. Patrick Canon Glynn, P.P.; and W. L. Micks, Esq. The Right Rev. Monsignor McAlpine, V.G., was present in the dual capacity of Parish Priest of Clifden and Member of the C.D.B.

The Archbishop of Tuam, after some introductory general remarks from His Grace and the Bishop of Galway, asked Father Farragher to give his views on the questions to be considered, having regard to the remarkably successful results that have followed the operations of the Arran Islands Co-operative Society, of which he is President.

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Father Farragher then made a full and interesting statement of the development of the fisheries of the Arran Islands since he first was connected with the parish, more than thirty years ago, pointing out that the success was due to the co-operative method of selling fish, and to the introduction of motor-boats to a limited extent, adding that the provision of additional motor-boats is essential to the full and satisfactory development of the Arran Fishery, which also, as he explained, need an improvement in the transit and some other arrangements which he mentioned. On the conclusion of Father Farragher's statement the Under-Secretary pointed out that the members of the Congested Districts Board present had, on the invitation of the Bishop of Galway, come to this Conference, and that they expected to hear the views of local representatives of Connemara, as to what definite measures ought, in their opinion, to be adopted by the Board for the improvement of the Fishing Industry on the seaboard of the County Galway. The Archbishop of Tuam thereupon asked Father Farragher to be so good as to make some suggestions as to what might be done.

Father Farragher then stated his opinion that it is of the first importance that such operations as might be decided on should be under the supervision and direction of an active Organiser of the Board. He also considered that motor-boats should be introduced gradually at the Connemara stations, that a motor mechanic should be stationed by the Board at Galway, and that instructions should be given in marine motor-driving. Instructors in fishing should also be provided for crews inexperienced in fishing in decked boats. As to the marketing of fish, Father Farragher briefly summarised his experience of the co-operative sale of fish, but added, that the mode of selling their fish was a matter to be decided by the fishermen themselves in each locality. In reply to a question whether the catch of South Connemara fishermen would be purchased by the Arran Co-operative Society, Father Farragher stated that, speaking generally, the reply would be in the negative; but that in the case of some non-society boats, driven by stress of weather into Kilronan, the Society had bought the catches in such exceptional instances. He could not give more than a personal opinion as to whether fishermen, other than those of the Arran Islands, would be admitted as members of the Arran Society, but he would be disposed to regard favourably such an extension of the Society's sphere, if satisfactory arrangements could be agreed upon. Father Farragher then spoke briefly as to what might be done at Cachla, Great Man's Bay, Kiggaul Bay, Carna, Roundstone, Boffin, and Cleggan, leaving the making of

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detailed suggestions to those more intimately acquainted with the several localities.

Right Rev. Mgr. McAlpine, as Parish Priest of Clifden, which includes within its extensive limits the fishing stations of Cleggan, Doonloughan, Bunowen, and some smaller places, made a concise but complete statement as to the condition and requirements of the fishing industry in his parish. The number of fishing boats engaged, and the harbour accommodation so well suited to present day conditions, would place Cleggan in the forefront of Western fishing centres, if its necessary and reasonable requirements in the improvement of transit facilities be complied with. The Monsignor pointed out that Cleggan justly asks that there should be a railway extension to it from Clifden. Such rail extension would make possible the carriage of ice to Cleggan and the rapid forwarding of fish to market in good condition, instead of the present slow and injurious jolting of fish in carts on a bad road. Rail-extension would ensure higher prices for fishermen, less risks of loss to fish merchants, owing to fish reaching markets, as at present, in depreciated and unsaleable condition, and the supplying of consumers' fish in better condition. His present opinion is not in favour of the sale of fish by co-operative methods, as the figures at his disposal appear to show that the payments to fishermen under the open market system are, considering the drawbacks in transit, as satisfactory as under co-operative arrangements. This statement elicited a sharp discussion, in which different opinions were expressed. Monsignor McAlpine also referred to the conditions of Doonloughan, Bunowen, and the other smaller places, for which no suggestions were offered, beyond the improvement of the landing facilities and road at Doonloughan.

The Under-Secretary mentioned, in reference to the question of railway extension to Cleggan, that the C.D.B. had on the 11th of this month considered a report made to them to the effect that surplus rails, wagons, and locomotives, of a two-foot gauge, are, at present, in the possession of the War Office, and that the Board had directed an application to be made to that Department for a sufficient supply of such material and rolling-stock to enable a road tramway for goods to be constructed between Cleggan and Clifden, and between some other places on the Western Coast. Such facilitation of transit communications, no doubt, involves serious difficulties as regards construction, wayleaves and working arrangements, but the matter shall receive, in these respects also, the active attention of the Board.

The Archbishop of Tuam then reverted to the question of the fishery

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development of South Connemara, and invited Father McElinney to state his views.

Father McElinney spoke forcibly of the poverty in which the people of his parish live, and expressed the opinion that the development of fisheries and industries is essential to any substantial improvement in the condition of the inhabitants of the Spiddal (Galway) Parish. He pointed out that there are piers at Barna and Spiddal, and that large boats should be provided for both places. This suggestion led to a discussion, in which the prevailing opinion was, that at neither places could large boats be kept in safety, owing to the want of shelter against the westerly wind and high seas. Father McElinney then suggested that open boats should be provided at these two places, and he was assured that under the existing Loan System such boats, with gear, could be provided by the Board in suitable cases. He then advocated the provision of motor-boats and instruction, for Cashla where, and at Rossaveal, are good piers and anchorages. He considered that the fish could be delivered at the Aran Islands. (In this connection, it may be stated that Canon Glynn and Mr. Micks had a conversation with Father Davis, Mr. Martin McDonagh and Mr. Edmunds, on the night of the day of the Conference, and that Mr. Edmunds strongly recommended that one of the road-railways should be constructed from the M.G.W.R. Co.'s rails at Galway to the pier at Cashla. This line will also be mentioned to the War Office in connection with the Board's application for rolling-stock and rails). Father Davis then, at the request of the Archbishop of Tuam, made a full statement as to the present deplorable condition of the Claddagh fishermen, as regards want of boats and fishing gear.

On Demobilisation, between 300 and 400 fishermen of the Port of Galway will be sent back without any provision for their future, except 28 days' pay, and they will also be without boats and gear to earn a livelihood in their former occupation. All these men, and others in the district, are experienced fishermen, for whom a sufficient supply of motor-boats is expected. It is realised that the expenditure involved in such a scheme is too great for the funds of the Congested Districts Board, and Father Davis and the Board are accordingly in communication with the Admiralty for sufficient assistance, as the matter is being considered generally in connection with reconstruction measures.

The conclusions of the Conference are that :—

(1). Two feet gauge road railways should, if practicable, be constructed between Clifden and Cleggan, between Ballinahinch and Roundstone (and between Galway and Cashla).

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(2). A motor-boat should be provided for Cashla, Great Man's Bay, Kiggaul Bay, Carna, Roundstone, Boffin, and Cleggan (that is, seven in all), provided suitable crews can be got, upon such conditions as may appear to the Board, in consultation with local advisers, to be likely to ensure successful results.

(3). The suggestions as to supervision, instruction in marine motor-driving, and in fishing, and also the placing of a motor-engine mechanic at Galway are recommended to the favourable consideration of the Board.

Votes of thanks were passed to the Archbishop of Tuam, for the judicious chairmanship of His Grace during the Conference; to the Bishop of Galway for the initiation of the Conference, and for His Lordship's cordial reception of its members; and to the Under-Secretary, and other members of the C.D.B., for coming to Galway to consult with those locally interested.

23 Rutland Square, Dublin,

13*th February*, 1919.

Father Farragher. This is a very imperfect report of our meeting.

The Chairman. The report was not made from shorthand notes?——No.

I take it, Father, if there is any further Conference of a like nature, it would be an advisable thing to have a shorthand-writer present. It would be money well spent?——Yes. I was surprised there was not one there.

It is a very useful thing to have afterwards?——Yes. I had no voice in the arrangements. I sent the following to the Secretary of the C. D. Board, and a copy to each member present at our meeting:—

St. Enda's,
Aran Islands,
Co. Galway,
Feb. 26th, 1919.

The Secretary,
C. D. Board,
23 Rutland Square,
Dublin.

SIR,

Referring to your Report of meeting in Galway on the 13th inst., a copy of which reached me on the 21st., I beg to offer some remarks, by way of supplementing my statements at the meeting:—

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1*st*. It would seem from the Report that I claim for Co-operation full credit for the development of the Fishing Industry in Aran. I fancy that, while that appears to me from the reading of the Report, I did not mean to convey any such impression. It was only in 1915 the Aran Isles Co-operative Fishing Society was first established; while the C. D. Board has been engaged in the development of fishing since 1892. There is no doubt, however, without the assistance of the Board, Co-operation would not have been undertaken, nor could it have succeeded, as the Society had no capital.

2*nd*. The suggestion I made, about a motor mechanic, was that the Board should retain in their service a thoroughly competent and practical marine motor mechanic, available whenever there was a serious breakdown, and who would, from time to time, when not otherwise specially engaged, inspect and overhaul the engines acquired on Loan from the Board; and that the Board might have in stock a reserve of parts of the different engines—I mean parts most likely to be worn out, or otherwise most likely to be required—say, at Galway for West, Baltimore for South, and Downing for North. As to teaching young fellows, I may say that wherever you have motor-boats, the best and most apt, who are most suitable, learn quite easily, and learn what is practical. That occurs here, and, I am sure, in all places where there are motor fishing boats.

In this connection, I also suggested that insurance of motor-boats should be confined to Ireland, as being insured as at present makes liabilities much greater than would be. If the number of motor-boats in the congested areas is not sufficient, it ought to be quite easy to have all Irish motor-boats of the C. D. Board and Agricultural Department in one Society. Recently I had a conversation with Mr. Holt on this subject, and from it I concluded he would approve of my suggestion.

3*rd*. As to having the number of motor-boats increased, I would say that of the existing sailing boats, there are some quite large enough, and I presume strong enough, to have engines installed. This would be less expensive and more expeditious, as, at present, everything is so expensive. There are advertised for sale, from time to time, second-hand sailing boats, which might be secured and have motors installed. In such an attempt, however, very careful examination by a competent tradesman is absolutely indispensable.

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4*th*. On the question of transit generally, I desire to say, it is a most important question, and one which requires considerable consideration. A line of narrow gauge railway on any of the routes mentioned in Report would entail transfer, which would entail delay and expense at the connection with the Midland Line. Even so, however, it would be a great improvement in each place, and would revolutionise transit from here completely, to the advantage of the development of fishing here, and at the different places between Galway and Roundstone. Now, as to the present transit from here to Galway, it is absolutely necessary there should be a change. I have always felt, and often stated, that the Steamer Service between Galway and here, to be thoroughly effective, should start from here; or, in other words, the steamer should make her headquarters here. The present steamer is much too expensive; and in helping the Galway Bay Steam Boat Co., the Board must see that already the freights on fish are very high, and any further rise, as, I am informed, is contemplated, would to a great extent, paralyse the fishing industry; especially when it is borne in mind that the prices of fish are showing a very material drop, while that of salt, barrels, labour, etc., are the reverse. The fares for passenger traffic and ordinary goods could bear it better.

5*th*. In the matter of supervision, or organisation, I would respectfully suggest a change. On this point I am reluctant to dwell at length, but would respectfully suggest that it may get full and mature consideration. I may, however, say that for the Cashla, Great Man's, and Kiggaul Bays there would be an absolute necessity of having a good energetic man on the spot. I have known Mr. Foley, who is at Cleggan here, off and on, and consider him a hard-working, energetic man; and being a native Irish speaker, which would be indispensable, in that locality, he ought, under competent supervision, do well. Of Aran I may speak or write later, when a suitable opportunity may arise.

6*th*. As to Spiddal and Barna. I would certainly say that a trial with a motor-boat, of the Greencastle Yawl style, but larger, ought to do well at Barna, where some fishing is done, and, perhaps, at Spiddal too.

7*th*. Let me now ask you to reconsider some of the applications made for loans for more motor-boats in Aran; as also the slip at Portnacosson, Inishmaan.

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The curing stations here, and at Kilmurvey, sorely need extension and sheds. It is impossible to work, as has been done, in an open space in some weathers, and the result is, that the work so done is badly done, and much more expensive. The expense might be met by making a charge for use of shed, as is done elsewhere.

The matter of the office on the Quay here needs reconsideration, and I hope it may get same.

Finally, I beg to remind you that the question of a boat-building yard and cooperage for the West is worthy of consideration; as also the curing of fish, and mounting of nets.

Respectfully yours,

(Signed) M. Farragher, P.P.

1109. *Chairman.* Father, has anything been done out of that since?——Not a bit.

1110. Have you any hope of anything being done?——I am always living in hope. A motor mechanic is there, and, as he is available, we intend getting engines installed in two motor-boats.

1111. Are they both the same type of engine?——They are both the same class of boat, same horse-power, and the same type of engine.

1112. You are keeping, as far as possible, to the one type?——Yes.

1113. *P. W. Kenny.* Was the motor mechanic appointed since the Report?——Yes; he is living in Galway.

1114. That was one result. But has he anything to operate on?——He is there, himself, his wife, and his family, at £6 a week, and they have not even got a specimen engine, although he has been there for the last fortnight. He has been availed of during the last week. One of our engines got broken down, and he was there on the spot to fix it up.

1115. *Chairman.* We would like to have some particulars of how marketing is being done by the Co-operative Society?——Of course, we have fresh and cured fish. The English is really the only market we avail ourselves of for fresh fish. We have barrels, salt, and boxes in stock. When the fish come in, they are put into the boxes, if they are going to be sent away fresh. A man labels the fish, and each man hands in his own fish and gets a docket for the amount of the fish he sends in. The fish is sent away to the different markets. We send fish to about 15 places in England. We have wires nearly

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every day. The Manager sends the fish to meet the demand, and to get the biggest prices he can. The fish has to be iced in Dublin. In the Spring season it was difficult to get an adequate supply.

1116. Before you go too far, I would like to ask you a question about your marketing. If these arrangements are made on the mainland, it will mean separate managers, and that the same watching has to be kept on the markets. It will mean a repetition of expense in each of the small districts, and the market will not be increased by these different stations?——You mean the supply?

1117. You may increase the supply, but you will not increase your markets for the disposal of the supply?——I don't suppose so.

1118. Therefore, in the natural order of things, the additional stations, some of them with supplies not equivalent to your own, will be trying to carry on with heavy overcharges. Is not that so?——Yes, but my idea is, that all along from Slyne Head to Galway they would make one centre of Aran.

1119. *Thomas Johnson.* Why should Aran, not being in the mainland, be headquarters?——The possibilities for transit are there. They all fish on the same ground.

1120. Is Aran the nearest place to a railway?——It is not, but it is more approachable by steamer than the other places.

1121. *Chairman* It would obviate cartage?——Yes.

1122. *Thomas Johnson.* How far is Aran from Galway?——About 30 miles. If you had different societies in the different places, as at present, they would never be able to meet the competition of the buyers, and the expense would be too high. When I was put that question I did not want to convey that I coveted them coming to Aran. Our Society would be prepared to make arrangements to accept these as members of the Soceity, if they were prepared to comply with the conditions. Take Aran or Roundstone. They fish five or six miles out. They never fish with long lines, and as long as there are motor-boats, it is just as easy to come to Aran as to Galway, and easier. As the season advances, and the herrings come more towards Galway, it is easier for the boats to go to Galway. We had our men in Galway under the same conditions as in Aran. If they had to go to Galway they would have to turn away from Aran fishing ground.

1123. *Colonel Moore.* Do the mackerel come into Galway Bay?——They do in the Autumn, but not in the Spring. In Autumn the mackerel is easy to cure, but at this season they would scarcely take mackerel at all. Of course, we only cure when we cannot get them away fresh, while the price is good. Last year we cured 2,000 barrels. We were able to pay nearly £1 a cwt., and

this year 12/- was paid. Last year the transit was so bad we lost 1,100 boxes in one week.

1124. *Chairman.* At present you have got the machinery established, and you have proved it can be, more or less, satisfactorily carried out?——Not more or less, but undoubtedly.

1125. I take you correction. It can be carried on successfully. If there is to be established an organisation on the mainland, in the same manner in which you have established it on the island, you have either to send your men to the mainland or go back to the stage you reached in the earlier days. They have got to go all through the spade work you have gone through, and that is going to cause considerable expense?——Yes, of course, the fishermen would have to pay for that.

1126. I will ask another question, and it is a question that has to be considered nowadays. Irrespective of Loans from any Departments or Bodies, is there a possible chance of a paying industry being carried on with Loans at the ordinary commercial rate?——I am not up in what you might call finance, but I expect it could.

1127. If you were a business man would you take the risk of borrowing money at the ordinary rate and carrying on that industry?——I would, if I had a free hand.

1128. Is it possible to educate people on the coast to take that risk?——I believe it is, but it would take a good deal of time. To give you an idea of it. A good many of our shareholders have deposit-money, and so could help us along. It took some time to educate them to do that, and I put money into it myself.

1129. I quite understand you would do what you could. The reason I ask that question is, sometimes here we have the habit of waiting from week to week and from year to year, when it might be possible, with a little more pluck, to face our own difficulties?——Yes, there is no question about it. It is the proper thing to do, if it could be done.

1130. *Colonel Moore.* What interest does the Society pay you for these deposits?——4%.

1131. *Chairman.* Instead of waiting for a thing that may never come, if the inquiries could be developed into other channels for finding the capital, do you think it would be advisable?——Yes, I think it would be a great help.

1132. You think the people would take the risk on the security?——I am sure they would.

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1133. What security would be likely to be offered?——The only security would be the mortgage on the boats.

1134. The people who advance the money would take the ordinary risk, as the fisherman does?——The only thing is, they would demand a higher interest. The Board has treated us with much reluctance for the last four or five years. There is Baltimore. That was a successful enterprise before the Board was started. It was only in 1910 or 1911, on re-construction of the Board, that it came under their sphere at all, because it was not a congested area.

1135. We have naturally a desire to get all successful things and use them for our own advantage?——I do not think it is fair.

1136. It is not fair, but human nature is human nature. You think there would be a reasonable chance of success if energies were devoted to trying to find the capital, at ordinary rates?——There would, in some instances. These people who have been fishing for the last four or five years would put in some of their money.

1137. They would put it in at the ordinary commercial rate. If you go further with that, perhaps, in your own district, the money that is necessary might be found, or a considerable portion of it?——I think it would be hard to persuade them.

1138. From your own knowledge of the conditions, you would be prepared, as a business man, to take the risks?——Yes. In the early stages of the Co-operative Society, before we got the £450 from the Board, I mortgaged my own Christmas offerings for the time, until we got money from the Board. From time to time I have lent money, but, of course, to a limited extent.

1139. Perhaps your limited extent was more than a capitalist's big sum to yourself?——Yes.

1140. *Thomas Johnson.* I have some questions to ask with regard to Aran, and the funds applied to the industry. You spoke of £15,000 for a motor-boat for carrying fish from Aran to Galway, as a possible means of meeting the excessive charges. Can you give us any idea of the total amount of freight you have paid on an average year for that carriage ?——The amount of freight we paid the year before last was £1,764 10s. 11d.

1141. *Chairman.* At a lower rate than at present?——Yes.

1142. Is it your intention, Father, if the motor-boat was started for Aran, and you have not sufficient freight to keep it occupied all its time, that the boat would be available, if necessary, for other stations, and so increase its earning

capacity?——It might. You see, it has first to run for tides and trains, but there is a good deal of freight besides fish.

1143. *Thomas Johnson.* The interest on the loan at 2½% would be about £400. What is the cost of marketing fresh fish from Galway to the English markets at present?——5/6 a box.

1144. I am trying to get the rate per lot. You send your boxes to Galway, and you send them full?——Yes. They take 90 full.

1145. When they come to Dublin you have to put ice in them. They won't take 90 fish in addition to the ice?——Yes, they will. We use the ice, if we get it from Dublin to Aran.

1146. It takes 5/6, on an average, per box, from Galway to the English market?——Yes.

1147. *Colonel Moore.* That does not include commission?——No.

1148. *Thomas Johnson.* What would be the average weight of a barrel of mackerel?——About 3 cwt. A barrel costs more than a box.

1149. You are aware, of course, this question of fish, and the decline of fish, has been the subject of inquiry for at least, a century. There have been the same complaints all the time as to the decline of fish in particular districts, and the suggestions have been much the same at every inquiry, and we are really still pretty much in the same position as we were?——Yes.

1150. Speaking of motor-boats, the need is for motor-boats simply to enable fishermen to fish further out at sea, but there is no reason why fishermen, without motor power, could not get as many herrings as 20 years ago. The value of a motor-boat is to give greater control in fishing?——Yes, in bringing him to the fishing ground and back.

1151. I suppose it is the increased charges for fishing that makes it necessary for him to have a larger amount of material to work on?——Yes, and the fish has to be delivered in the market in good time.

1152. What time, on an average, does it take to get fresh fish marketed, if you have mackerel coming in, say, this morning?——It would not be marketed until Saturday, that is two days.

1153. If you were right at the rail-head you would not be much better off? ——Not much.

1154. It would be very difficult for mackerel from Baltimore to get into the market next morning?——My impression was that they were able to get the fish marketed a day earlier than we were. We were looking into that during the war.

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1155. Your success was very largely facilitated by war conditions, and the great demand for mackerel for food in the English market?——Yes. As far as America is concerned, pre-war conditions would be just as good for fishermen.

1156. Do you know the charges in marketing mackerel from the time they are shipped at Liverpool?——We send them f.o.b. from Liverpool.

1157. The buyers in Liverpool take all the risks?——Yes.

1158. You don't market any in Ireland?——Very little.

1159. Can you suggest any reason why your Aran fish should not be sold or consumed in this country?——The reason we do not sell fish in Dublin is, we do not get anything for it compared with the prices we get in England. I am told it is quite a common thing for a man to send fish to England and return the price as he suits.

1160. Apart from Dublin, there are dozens of towns where it might be sold?——There is no doubt a sale of fish could be developed throughout the country, if organised, but we could not afford it, nor could any Society afford to organise all over the country. The Irish Agricultural Society talked about that. There is a great demand for fish all over the country, if it was properly sent around, but it would not do us to be sending two or three boxes here and there, and trying to pick up the money. We sell a good deal of fish in Galway.

1161. Do you know any reason why there should not be a Distributing Agency at Galway to supply the midland towns in Ireland?——There is no reason. It ought to be done. We ought to be able to sell more fish than we do in Ireland.

1162. You claim, I think, that there has been no decline in the quantity of fish on your coast?——Not for 20 years. Of course, sometimes you might have one season not so good, but, taking it all round, I think it is better and more plentiful in later years than for years before.

1163. Although the trawlers have been plying?——We keep them out three miles outside the island. Three trawlers crossed the limit, and they were fined £100.

1164. You would not want motor-boats if you were only to have them on a three-mile limit?——They would have to go outside that for mackerel.

1165. The trawlers have not affected the mackerel?——No, the returns show they are getting as much as they ever got before.

1166. It has been alleged that steam-trawlers destroyed both mackerel fishing and herring fishing?——I cannot see how they can destroy mackerel. Mackerel swim too high for them, and they do not touch the spawning ground.

Of course, sometimes, but vary rarely, they do get mackerel in the nets. The amount of mackerel I ever heard of trawlers getting would not affect the fishing one bit.

1167. Is there a considerable amount of line-fishing?——Yes.

1168. What class of fish?——Turbet, sole, plaice, brill, skate, flat fish, Jack-a-downy, cod, hake, conger eel, haddock, and, I am sorry to say, a lot of dog-fish. We cure ling sometimes in Galway, and sometimes the fish dealers in country towns would buy it.

1169. You do not do that for the English and American markets?——We do not cure cod or ling for the English or American markets.

1170. Would you agree with the statement that nine-tenths of the fishing industry of Ireland is drift-net fishing?——I think a large proportion is drift-net. At the present season it is stake-nets.

1171. It is the same attached to the shore?——Anchorage is what they call stake-nets. The canoes have a kind of grapple. They could take nets out, and throw out the anchor, and leave it there until morning.

1172. There are few trawlers?——Yes, but some motor-boats have trawlers in the winter.

1173. What is the total cost of a fairly good-sized fishing boat, with mackerel train?——About £3,000, that is for a good-sized boat. Nets are frightfully dear now. Before the war £3 would be paid for a net that now costs £12.

1174. Speaking of the coast around, do you think that efforts should be made to encourage large boats, or should they rather specialise in small boats?——I am glad you asked that. I do not think it is desirable to have large boats in the in-shore fishing. I think it would be better to have a boat of 10 or 15 tons. It would have a lighter draught, and be sea-worthy enough for the distance they go. I consider that for the cost large boats are not at all desirable, and the small boats would not be nearly half so expensive; but I would not have any boat without a motor.

1175. Not even canoes?——You could not have a motor in a canoe, but in anything that would be regarded as a reliable boat for fishing, and give a man a decent chance of living.

1176. You are in favour of a man specialising in fishing, and not combining fishing with farming, and so on?——Yes, if possible. There are many of these half-farmers and half-fishermen. They have stalwart sons, and they could well afford to train them for fishing.

1177. In one of the earlier *Commissions*, as an inducement to the Government to provide money, it was stated that fishermen in no part of the country

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had been implicated in sedition or agitation, and that they had been honest and law-abiding?——They are honest, but I do not know about the kind of law and order we get.

1178. Have you any knowledge of oyster-fishing?——There are oyster beds at Recess, Letterfrack, and Clifden. They planted oysters also at Oranmore and Ballyvaughan, but whether they succeeded or not, I cannot say.

1179. Do you think it would be a desirable industry, on its own merits?——I cannot say. We could not have it in Aran, anyway. There is no place where you could plant oysters there. A good deal of lobster fishing is done.

1180. And your market for them is England?——We do not deal in lobsters. They are precarious and liable to die, but they make a good deal of them.

1181. Speaking of Co-operative Societies and the organisation of the traffic for the fresh fish market, supposing the industry is developed right round the coast, and the market is easily supplied with fresh fish, there would need to be some fresh outlet for cured fish?——I suppose, yes. You have 50 places like ours in the South and West engaged in fishing. It would be too risky to rely on a single outlet. There should be a standby.

1182. It would be always desirable to have a standby, because sometimes the fresh market is overstocked?——It is sometimes overstocked with mackerel.

1183. There is always a market for cured herrings. It is the best and most reliable fish for the poorman?——Mackerel is a delicate fish. There is no consumption for cured mackerel in this country.

1184. Do you agree that if there was a development of these local Co-operative Societies of fishermen that efforts should be made to organise the marketing under single supervision?——I think that would be to the advantage of the fishing industry.

1185. You think an effort should be made rather to organise the fishing industry as a whole?——Yes. I believe the industry would be more prosperous from the point of view of the fishermen, and they might be able to organise the sale of fish in Ireland.

1186. What is the present function of the Fishery Board?——That has been absorbed, I think, by the Agricultural Department. I met some of the officials. They lend money, the same as the Congested Board, but at a higher interest, but they never see how that money is disposed of, and they never supervise or inspect the boats or crew, or such things as that. For those who are being initiated into fishing, the importance of looking after the crew is not recognised by them. Suppose a man gets a new train of nets, these would require, for the first year, to be carefully dried in a practical manner. If you,

what you call, cure the nets the first year, there is not much difficulty after that. That is a matter the officials of the Congested Board never look after.

1187. *Chairman.* In other words, they never look after their security?——Never, and they do not care whether they sell or not. They just give a loan and get the instalments, and send a fellow round with a portfolio to get reports. We have two of them in Galway. When our fish comes along at Galway they never bother about it. We have to pay a man to do it, and sometimes we have to send a man to Dublin wih the fish. Now, it would not be too much at all for the Congested Districts Board to have some one to look after that.

1188. *Thomas Johnson.* I put it to you that it is quite a feasible proposition that the whole of the fishing industry in Ireland might well be organised into one big organisation, which would supervise or control the marketing, and give advice and assistance to the fishermen, and that that would be an economical method and the only safe method of running the industry?——I believe myself in Co-operation, wherever possible.

1187. I am thinking more of a federation of societies?——I understand what you mean, and I agree with you that that could be done.

1190. Ireland is not too big a unit for organisation?——Not at all. The people generally do not realise what Co-operation means.

1191. There is a perpetual complaint that fishing is failing, and that it is not what it used to be. I suggest that an essential factor, when fishing fails in a particular district, is that there is not capital enough behind the boats to keep the crew in proper order, and that when fishing is in a declining condition in one place it lessens the quality of the crew, and the loss of the crew makes it difficult to follow the fishing?——That is so, to a certain extent; but my idea is, that the fishermen should be acquainted with the localities where it never fails all round.

1192. It varies. Kinsale was a considerable station up to 25 years ago, and other stations also, and the point is, why did they not continue to prosper? My suggestion is, that they prospered up to a certain time. There was a decline in the fishing, and they gradually failed in consequence of the steady decline. The boats were allowed to get into low condition, and, perhaps, the men who lent the money would not allow the fishermen to go further afield, because of the loss of local trade, and when they wished to go they were not able to go. Supposing you had a sudden failure in your mackerel and herring fishing in Aran, what would happen?——For the first year, if they had motor-boats, they would go further afield; and, as a matter of fact, they have done so.

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1193. You were speaking about a larger organisation. Do you think it possible for your Society, or such other Societies as may be formed in the future, to get information as to fishing, from the fishing stations in the Irish and Scotch coasts?——I think you would have to have a person employed there, and paid for that.

1194. The merchants are always advised from the stations and the markets? ——Yes; but the information of the merchants would not be reliable for the fishermen.

1195. You do not know anything of the Continental markets?——No, except I know that Germany and Russia were a great market, but I have no personal knowledge or information regarding any of these, though I have as regards America.

1196. Speaking of larger boats, do you know anything of men being employed at weekly wages on these larger boats?——I have heard something of it, but not in Ireland. They do it on the trawlers, I think, but I have not taken much interest in it. I don't think there is any boat in Ireland where they are employed that way.

1197. It is mostly shares in Ireland. The boat is owned by the crew, or owned by the merchant, and the spoil is divided, half in half?——When the Board started first in Donegal they had a share system. Each man was a part owner, and the Board got a proportion, and then an agreement was made that, when the original cost of the boat was paid off, the men became joint owners, absolutely. That system would do well, if properly looked after. Now, where one man is the owner, and he takes on the crew, they first deduct the expenses which, when they are at home, is not big, just a bit of bread and butter and tobacco. After deducting that from the total earnings, the owner gets half, and the other half is divided between the crew. If a member of the crew, the owner also gets his share. When you consider the amount of money he has invested, this is a fair division, and, of course, the repair of the nets, which the owner is responsible for, costs a good deal. In the motor-boats, they get, in addition, half a share for the motor engine, and the cost of the oil is deducted from them.

1198. Have you any figures indicating the quantity of cured mackerel for the whole of Ireland?——No, but I think it would be a good thing if the industry were organised.

1199. You know there is a good deal of difficulty in getting barrels that will retain brine?——Yes. Last year there were barrels made in Derry, and they kept the water and leaked the brine.

1200. A large proportion of the cured mackerel arrives in America musty?——Yes.

1201. When you send your mackerel to Liverpool, the merchant there takes the risk?——He examines them first. That is a condition of the sale.

1202. Anything like 1,000 barrels would be too great a cargo to arrive in America at one time?——You see they have many depots in America.

1203. Yes, but to one port?——They could rail them.

1204. The risks are greater when they are taking a considerable cargo, especially the risk of leaking?——Yes.

1205. In practice, Liverpool is the distributing centre. I suggest, it is better to distribute the traffic among a number of boats, rather than to concentrate it in one cargo?——Yes.

1206. If cargo boats were travelling direct from Ireland to America, carrying, in part, fish, and, in part, other goods, would there be any advantage in Dublin, or Cork, or Derry over Liverpood?——Yes. You have to pay not only carriage to Liverpool, but cartage and dues, and so much a barrel for cooperage.

1207. Then it would be more economical to send small shipments by direct trade service from Irish ports?——For the seller, it would.

1208. On the score of expense, there would not be any comparison with Liverpool?——No. Supposing we took a cargo direct from Aran to Liverpool, it would mean a saving of 6/- a barrel, or so.

1209. Would it be any saving to you if the boat were coming to Dublin, instead of to Liverpool?——Yes.

1210. *Chairman.* If ships were calling at Irish ports, your shipment cost would be reduced. There would be no advantage whatever in carrying fish to Liverpool and back, 200 miles. There would not be an advantage to the seller or consumer in sending them back past Irish ports, as happens now?——Oh, no.

1211. *Thomas Johnson.* I am suggesting the practicability of gathering up cargoes of Irish mackerel and shipping direct from an Irish port, and that the distribution of small parcels of cured mackerel has been found by the merchants the most practical and economical method. It is better to use six ships in a week than one ship in a week, for carrying consignments for the sake of economy in transit, and the good condition of the mackerel on arrival?——So far as the conditions of arrival are concerned, I am sure the conditions of shipping from Dublin would be just as good as Liverpool.

1212. *Chairman.* Mr. Johnson is trying to make out the difference between shipping a full cargo of fish, and nothing else, from Ireland to America. My

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point was not full cargoes, but to make use of the vessels trading from Ireland to America for the shipment of small parcels, such parcels as would be collected in Aran, or at other points?——I see Mr. Johnson's point, that if you had a complete cargo, it would necessitate the additional difficulty on the other side of transhipping to other parts. That is a question I would like to have argued.

1213. *Thomas Johnson.* A barrel of well-conditioned fish, on arrival in the American market, would be 15 dollars, but good mackerel of the same quality, arriving stained, would not make 5 dollars.

1214. *Chairman.* In order to make the matter quite clear, if the present conditions of shipping mackerel, via Liverpool, were changed, there is the present condition as regards parcels and quantities; would it be any advantage to the Irish purchaser?——It would. He could have them much cheaper. I see there is a good deal in the point Mr. Johnson makes about large cargoes.

1215. *Chairman.* I am dealing with your present shipment, and the probability of shipments from Ireland. If the shipments were from an Irish port would the conditions be more favourable to Irishmen?——I think so.

1216. *Thomas Johnson.* As to insurance, you would not be in favour of combining your insurance with the English and Scotch boats, but if you confine your insurance to the Irish boats and crews, would not the risk be greater, and the premium higher?——I would not say that. The English boats are much more exposed to risks, and even before the war the accidents to steam trawlers were greater and more frequent. With Irish boats the risk of accident is not so great.

1217. Is that because they are smaller, and not trawling boats?——They do not go so far out to sea.

1218. They are not so strong and not so powerful. Does that suggest that the English fishermen the likely to take greater risks?——The boats are larger and more seaworthy, and they take greater risks.

1219. In view of their greater strength and power, are the risks of accidents greater?——They are, in as much as they are out in all weather, and in fogs.

1220. *Chairman.* Would there be any advantage in Irish fishermen adopting English methods in the matter of bigger ships?——I don't think there would.

1221. Would it be to the benefit of the fishermen?——I do not think it would be to his benefit in winter.

1222. The conditions of the fishing ground around the Irish coast do not create any necessity for having the larger boats?——I think the size of the boats we talked about is quite capable of producing a good living wage.

1223. And there is no necessity for going so far afield as the English boats to make profit?——I do not think so.

1224. *Thomas Johnson.* If there were Irish trawlers with sufficient power to go to Iceland to fish, and thence to the nearest port with their fish, they would be only Irish in name?——Yes, that is so.

1225. With regard to net-making, do you think it could be developed around the Irish coast?——Yes, and it is absolutely necessary that it should be. Belfast and Derry are the only places you can get nets, unless you send to Aberdeen or Liverpool. There is no reason why we should not have coopers ourselves. Last year we had to get coopers all the way from Donegal. We have a few young fellows now trained to some extent.

1226. *Chairman.* Are there not a large number of coopers at work in various small towns and villages in Ireland, making excellent barrels and tubs? ——There are in the North of Ireland.

1227. I have seen tubs made of teak, and other wood, in the market towns. There would be no great difficulty in establishing a cooperage. The skill is available, and the only thing is to select it.

1228. *Thomas Johnson.* It is the local women in Aran that have learned to do curing, and there is not much difficulty in the training. It would be necessary in any Curing Station to rely on local labour of that kind ?——Yes, there was a difficulty in getting girls into that at first, but they are all into it now.

1229. In preparation for the curing of mackerel, the same thing applies to herrings. May I suggest it is necessary to have, wherever there is a Station, a supply of material in readiness for occasions that may arise, and that that would require something in the way of national organisation? Now, could you suggest what would be the total sum required for establishing a small Curing Station—would £100 go far ?——Not very far now, when you pay £6 a ton for salt, and 15/- for a barrel. In the early stages of the war the merchants had a lot of barrels on hands, and as soon as the prices went up they put up their prices too. When we got short, they gave us these, and they charged the market price, no matter what it cost themselves.

1230. I am reminded that Mr. Flynn had, perhaps, 25 Curing Stations around the coast, from Kinsale to Aran, of which he was only using ten at a particular time. The fifteen others were simply waiting, from season to season, for fish to be available. I think that is essential, if you are going to take advantage of the fish when there is a large harvest, but it is only possible by some form of central organisation?——Yes.

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1231. *Chairman.* I put it to you that there is an alternative. If there was closer co-operation between the fishing industries in your district, with such villages helping each other, it would obviate that.——To a certain extent it may. Of course, it would be same thing anyway.

1232. Even now you could make a start?——You could, if you had the capital. You see, I wouldn't be able to get it now, if the Congested Districts Board didn't advance us the stock, or the price of it. We have no capital—at least, very little.

1233. If the scheme you suggested was carried into effect there would be no difficulty whatever of closer co-operation between the various fishing centres in your district. These things could be carried out, if you could work as one Union.——What Mr. Johnson says, I fully agree with. You would always require to have a reserve of stock for any emergency that might turn up. Whether it would be done from a Co-operative Society or other source is the question.

1234. I suggest amalgamated co-operation of the different districts. Is that feasible?——Yes; but you would require to have capital.

1235. You would have their combined capital?——Even though you had the combined capital, it would come to the same thing in the end. It would have to be very near to the place.

1236. I suggest it isn't quite necessary. It is not necessary, say, for every ten miles to have it. If you had one at Aran, one at this point, and one at the furthest point on the other side, that is all that is necessary for your district. Am I right in that assumption?——The question is whether you would have the stations erected, and if you had you would require to have stock there.

1237. I suggest, that if such a station were established in your unit, it would meet all your needs over a considerable portion of your sea coast?——It would, but you would require to have stock available.

1238 I am suggesting as a means, closer co-operation between the various units in your district?——You might be able to have it then.

1239. We put it that Aran is your principal unit. If, for any cause it is more convenient to have fish cured at the furthest point in your district, you would have a station there. If Aran was the most suitable, you would bring your stuff to Aran, and so on.——In case of emergency ?

1240. Yes?——Oh , yes; you could do that.

1241. *Thomas Johnson.* You heard the evidence of Mr. Traynor yesterday about Kilmore—about mackerel caught on lines?——I did.

1242. Do you think it would be a wise business proposition to establish a station where there are sixteen boats working at line fishing for mackerel?—— I don't think so. You would never have anything to cure from lines.

1243. *P. W. Kenny.* Speaking about centralisation, and the Chairman's remarks about inducing capital, where there is an industry of this sort, which is proven to be a profitable one, as you have shown it to be, and granted that it is a very good thing, that it could be expended as far as it could by the development of this centralisation idea, would it be essential to the success of that development scheme that there should be a railway extension to different parts?——Of course, you are going to handle a much larger amount of stuff, and such consignment would mean more trouble and greater risk of going wrong.

1244. Do you think it would be essential that the coast should be tapped at various points?

Chairman. Father Farragher has already suggested a means—a motor-boat stationed at Aran could carry the fish to Galway.

1244. *P. W. Kenny.* The probability of a railway extension is rather remote. The extension of a scheme is within our own compass, if we could only induce capital.

Chairman. Perhaps if you put it in another way. Would the existing railway conditions suit for an extension to the fishing industry on the Western Coast, were you able to obtain a suitable boat for carrying?——Undoubtedly, if we had an extension of the railway from Galway to Cashla Bay, that would bring the railway within 10 or 12 miles of Aran. Of course, it would mean a very big difference.

1245. *Chairman.* I put it to you, if you had this boat trading from Aran to the mainland, a railway is not an absolute necessity?——Not by any means.

1246. *Colonel Moore.* Wouldn't a motor car running along the coast, tapping the different fishing stations, be very much better than an extension of railway?——I don't know but it would be better. It would be a very big thing to have motor lorries there, if you had them.

1247. Some fish could come by boat, and some others, from the outlying stations, could be put into a motor and run down to Galway.——There is talk of having a motor service from Galway to Cashla Bay. If you had motor lorries on the road there, they would be almost equal to a railway.

1248. *Chairman.* And much cheaper.——It would be much cheaper.

1249. I just wanted to ask you a question. There is the difficulty of the odour of the fish remaining on a women's clothes. She doesn't like it. I suggest, it might be a very reasonable thing to get the girls cleaning the fish a

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proper outfit, so that the odour of the fish would not remain.——Yes. You know the Board, before the Co-operative Society was started, actually sent some of these girls down to pack herrings, and they were rigged up in that way, and looked very neat. Then, as soon as the day's work was done, they simply took off those overalls and had a wash.

1250 *David Fagan.* Does the Board still continue to keep an ice-boat moored at Roundstone?——Not for some years.

1251. Roundstone would be very difficult to organise into a co-operative business, as far as fishing is concerned. My recollection of Roundstone, eight years ago, is that the shopkeepers owned the boats. I was speaking to Father Duggan, this time twelve months, about it, and he considered any move that would get them from the shopkeeper would be a good move.——My experience down there is, they really never handle any money.

1252. In Clifden there used to be about twelve or fourteen boats. What about a station at Clifden?——I have heard it discussed more than once about having a station in Clifden. The harbour is rather an unapproachable one. The people so anxious to have a station in Clifden are the shopkeepers. They have a very good station at Cleggan, nearer the fishing grounds.

1253. Of course, the drawback to Cleggan is, you have no town?——No.

1254. And Cleggan and Clifden is a long way?——About seven or eight miles.

1255. Your idea would be that all the fish from Slyne Head should go to Aran Island?——Yes.

1256. And that fish from Clifden should go to Cleggan?

Colonel Moore. Why not Westport?——Westport is a long way. It isn't the length so much, but there are so many islands, it is hard to go through a veil of fog in bad weather.

1257. *Colonel Moore.* By going to Cleggan you don't get a railway.—— If you have fish, there is no reason why you would not have motor lorries. At that meeting we had the thing was discussed, but I didn't hear that any effort was made since to provide them.

1258. *David Fagan.* Do you use the offal for any purpose?——No; except for feeding pigs, and for bait.

1259. You never tried to manufacture manure?——No; but it is a thing that would be very desirable.

1260. There is no doubt fish manure is the best. It is fetching about £30 a ton at present.——There is no question it would be a great industry. We tried to induce the Congested Districts Board to establish an ice factory

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in Galway. Then we tried to get a loan from them for a new machine, so that we could make our own boxes. That is a matter I overlooked talking about. With a view to having our own boxes made, we bought forest timber, and got in touch with the saw-mills in Galway. They wouldn't cut it, because we had been buying boxes from themselves. We have 50 ton of timber in Galway, and we cannot get it cut. I think we will get the machine yet. Besides cutting timber for fish boxes, it would be very useful for people to cut timber for themselves. They have an amount of wreckage from time to time, and they have to send it to Galway to get it cut.

The Commission adjourned to Tuesday, December 9th, 1919.

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